

THE FAR EASTERN REVIEW



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"THE DANGEROUS MR. STIMSON"
A PLEA FOR MANCHUKUO
WHAT WILL SAVE THE YEN?

Vol. XXVIII

SEPTEMBER, 1932

No. 9

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VOL. XXVIII

SHANGHAI, SEPTEMBER, 1932

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"The Dangerous Mr. Stimson"

IT IS TO LAUGH

(Reprinted from the Philadelphia, Pennsylvania "Record" of August 12)

That War With Tibet

General Butler suggested recently that what we need for prosperity is a good war with Tibet. The opportunity is at hand, if Secretary Stimson will but act upon it.

From Harbin come reports that a Tibetan army is attacking Outer Mongolia, seeking to re-establish the rule of the "Living Buddha" in that Soviet State.

It will be remembered that China is a signatory of the Kellogg pact and that Tibet, actually "independent" (under British auspices), is still nominally a part of China.

Tibet, then, is violating the Kellogg pact. Obviously it is Secretary Stimson's duty to warn its ruler, the Dalai Lama, that we will recognize no territorial changes brought about in violation of the treaty.

Surely the American taxpayers' blood will boil over if that Tibetan army violates the territorial integrity of Sinkiang, Kokonor, Kansu or Ninghsia on its way to Urga? . . .

Maybe we ought to make Outer Mongolia safe for democracy.

A FLOOD tide of publicity has swept over the world following the recognition of the new state of Manchukuo by the Tokyo Government. Conspicuously lacking from the great volume of what has been said and what has been written about this important development is any expression from the American State Department, hitherto the most articulate of world forces regarding the controversy between Japan and China. Mr. Henry L. Stimson, the American Secretary of State, told newspaper men at Washington that he had nothing to say regarding the Japanese recognition of Manchukuo. This is, to say the least, surprising. In a manner of speaking one might come to the conclusion that, after all, it may be better to lock the barn after the horse has been stolen rather than to burn the barn down.

Mr. Stimson's several expressions in the form of notes, letters and orations, that have punctuated the course of the Sino-Japanese conflict, have had a full measure of laudation inspired by a variety of motives from many quarters, but it is exceedingly doubtful whether in all that he has written and has said any actual good has been achieved either for China, Japan or for the United States, and more particularly, for the cause of the peace of the world. European interests that discern major advantages in any American entanglement in the Far East give unstinted applause to Mr. Stimson, and the cult of the pacifists in America give endorsement to his views, but the signs are wanting that he has helped either his country or the Administration he serves. So far as the Hoover Administration is concerned the clear handwriting on the wall in the United States, in fact, seems to be capable of interpretation in the results of the straw vote recently taken for the contending presidential candidates, showing a tremendous swing in favor of Franklin D. Roosevelt and against Herbert Hoover. Other significant symptoms of the actual situation seem to be shown in the outcome of recent senatorial elections. As the fellow said, it looks like a Democratic year in the U.S.A. And whether Herbert Hoover or Franklin D. Roosevelt is elected next November the opinion is not entirely wanting that in any case the passing from the political stage of Secretary

Stimson is beginning to become something more of a probability than a possibility.

If the effects of Mr. Stimson's utterances are of doubtful consequence, or are negligible, in the United States, in the Far East they have positive and magnified effects.

In this part of the world the forces loosed by the American Secretary have, on the one hand, brought about conditions that are crystallizing into a hard resentment, bordering on hatred, in the breast of an erstwhile good neighbor and valuable customer, which is Japan, and, on the other hand, for China, the notes and oratory conceived at Washington have implanted hopes and expectations which for practical purposes are impossible of realization, and regarding which the great American public has little knowledge and less sympathy. And a logical consequence is that frustrated hopes will engender among the Chinese a sentiment akin to and just as harmful to American interests as is the feeling growing in Japan to-day.

The Reaction in China

No promise of American sponsoring, anywhere, has been given or implied that the United States will fight a war for China, but a large body of Chinese opinion holds the belief that such a pledge has been given. They expect America to do this and, whatever his intentions, Secretary Stimson has bolstered and encouraged this belief. And with the United States thrust into the League of Nations through a basement entrance, by linking American treaties with League commitments or through consultative arrangements, it might come to just that. For the United States it would, of course, be a fight for a fetish, with everything to lose and with no impossibly remote chance of any tangible gain, but it may be brought off. An incident, or one of those unlooked-for catastrophes, a spark flung carelessly into the powder magazine, and the thing is done. Then swiftly follows the high clamor of public hysteria and the tom-tom of the war drums of the press.

If America must go to war to humble a former ally and a friend for an abstract principle to serve the ends of the pacifists then, without delay, let the United States build the fleet up to treaty limit—as Japan has done—open the recruiting offices and grease the machinery for conscription, get the Liberty Loan speakers into action and print the bonds for the American public to buy, for however go the fortunes of the war, the United States will have to pay, more than ever before. What a rousing din of applause this would bring from Europe! And what a great day it would be for Soviet Russia! The odd thing at the moment is that the American public hasn't any glimmering bit of an idea of anything of this sort; certainly, it has no desire for anything of the kind, but it would be explained in due course, to be sure, that "Japan is the aggressor."

The recent speech of Mr. Stimson before the Council of Foreign Relations in New York was a logical sequel to and followed the lines of the lofty ideals which President Wilson enunciated and which have suffered a process of deflation under impact of the harsh practicalities of European politics. The Secretary's address certainly caused a splash that rocked diplomatic craft in every sea, but in the United States itself it is doubtful if anything more than the faintest surface ripples went west of the Mississippi river. If one stretched a tennis net across State Street in Chicago at high noon the odds are all against the chance that a single individual could be snared who understood fully all the implications of the controversy in the Far East. As well hope to find a casual stroller in the Far East who could adequately explain the inner causes of the fighting in the Gran Chaco region between Bolivia and Paraguay. In the rarified stratosphere of make-believe where dwell the high priests of the creed of "things as they ought to be" the impression made by Secretary Stimson's speech was most profound, but down at the cross-roads of the American hinterland where they make congressmen it was just a talk about "another of those foreign rukuses."

In the close-packed islands of the Japanese Empire, however, where every schoolboy knows the names of Matthew Perry and Townsend Harris a different situation exists. The conflict in Asia to the American is remote and relatively unimportant, trivial. In the minds of the people of Japan, correctly or otherwise, it is a matter of life or death, of survival or extinction. That is what they believe. Is it to be wondered at then that any development that touches on their vital problem causes instant concern? The resentment at Tokyo over the implications of Secretary Stimson's speech would seem to have some reasonable basis.

In the course of the address that he made Secretary Stimson himself said, "As it stands the only limitation to the broad covenant against war is the right of self-defense. This right is so inherent and universal that it was deemed unnecessary even to insert it expressly in the treaty." This covers precisely the contention that Japan has put forward and whether this contention is to be sustained or overruled does not rest with Mr. Stimson, or with any of the sixty-two signatories to the Pact of Paris, but as things have fallen out, the decision is to be given at Geneva.

The Appeal to the League

When China appealed to the League of Nations to save her from the consequences of official folly (although Nanking did not put it quite that way), the League, after some preliminary wrestling with its biggest problem since inauguration, constituted itself a court of adjustment. It found itself with two complainants. China was the senior complainant by virtue of having reached the Geneva ear first. Japan equally had a claim to the position of accuser, but because of her late arrival an attempt was made to place her on the defensive. At any rate, the League was in the ticklish position of Solomon, but with both mothers refusing to have the baby divided.

The case of Manchuria was before the Court of the League, even though there was nothing but good will to commit either complainant to acceptance of the court's ruling. The League proceeded to secure expert evidence, picking its own talent in the personnel of the Commission of Inquiry. Having despatched the Commission to the scene of the alleged crime, the court sat back to await the testimony in the shape of the preliminary and final reports from Lord Lytton and his associated investigators.

It is the legal practise in civilized countries sternly to forbid public discussion of a case during its trial in a judicial court. Severe punishment awaits the transgressor. Discussions *sub*

judice bring swift action from judges. While a trial is proceeding public action likely to influence judge, jury or anybody else cannot be tolerated in the interests of justice, although new evidence always may be admitted.

Under the circumstances, therefore, the action of Mr. Stimson in addressing the Council of Foreign Affairs on the question of Manchuria, and in the course of that address indicating the taking of sides in the dispute, criticizing a party before the bar, may be deemed most unstatesmanlike, if not unethical, illegal and unfair. His position as Secretary of State for Foreign Affairs, or Foreign Minister, lends to his every public utterance an official character; his words on Manchuria will be generally accepted as an informal statement of American policy, which might quickly be formalized if certain conditions arise.

His speech has all the earmarks of a deliberate attempt to influence the League of Nations to a course of action concurrent with American policy as interpreted within the Hoover cabinet. There is nothing reprehensible in an American policy as it tends to carry out the desires of the American people for peace and fair play; but in this Manchurian dispute a very large section of world opinion inclines to the view that Mr. Stimson is stepping beyond the bounds of propriety, first in taking a stand antagonistic to Japan before the full facts are placed before the League, and secondly in endeavoring to shape the League membership into a frame of mind prejudicial to free judgment of the Manchurian case.

Without any predisposition to criticize the address before the Foreign Affairs Council, one cannot fail to sense therein a plan to coerce the League jury at a time when the "peers" scrupulously should be left free to accept the report of the Commission of Inquiry, and other evidence, unadulterated by prejudice. No other foreign minister has forgotten himself so far as to indulge in attacks upon Japan or China at this critical time when delicate conditions call for the most careful utterances about the case at issue. The phrasing of Mr. Stimson's address, offering a variety of loopholes, offers testimony more to the speaker's expertness than his sincere wish that any other meaning than an attack upon Japan is intended. We are inclined to believe that Mr. Stimson has lost touch with his electorate, and has hurt the cause of his party and nation by ill-advised and hasty speech.

The Pacifist Complex

One of the queerest quirks in the natures of the most ardent pacifists is their readiness, even eagerness, to invoke the punishment clause—Article 16—of the League Covenant. They swish the schoolmaster's cane with all the enthusiasm of the old sword-rattlers. The League Covenant, Briand-Kellogg Pacts and other instruments framed to discipline the world arouse in many of their supporters an intense desire to see how the teeth work. From the outset of this Manchurian trouble there has been distastefully ready talk about blockades, united punitive expeditions and other like disciplinary activities, mostly designed to give Japan a taste of punishment for reasons presently seen. Mr. Stimson would be hard pressed to show his innocence in this regard, especially when we consider the opening remarks in this address. For he "described the Kellogg-Briand pact as a forceful instrument on which the nations could rest hopes for peace."

Forceful instrument. The Big Stick. Article 16. The analogy is plain. The League is reminded, rather grimly and provokingly reminded, it seems to us, right at the opening of an address by the head of the American State Department that the League and the World rest their "hopes for peace" on a "forceful instrument." It sounds like saying we'll have peace if we have to go to war for it.

Consider the forceful instrument:

"Should any member of the League resort to war in disregard of the Covenant. . . it shall *ipso facto* be deemed to have committed an act of war against all other members of the League which hereby undertake immediately to subject it to the severance of all trade or financial relations, the prohibition of all intercourse between their nationals and the nationals of the covenant-breaking state, and the nationals of any other state, whether members of the League or not. . . It is the duty of the Council to recommend to the several governments concerned, what effective measures, military, naval or air forces, the members of the League shall severally contribute to the armed forces to be used to protect the Covenant of the League."

When Mr. Stimson said forceful instrument he might plead innocence of reference to the League Covenant, and the absence of force in the Briand-Kellogg pact, but his use of the term at this time, when the League Commission's report is impending, is highly significant, especially in connection with the Secretary's previous indications of coolness towards Japan. A forceful instrument *morally*, the Briand-Kellogg pact indubitably is, and all honor to Mr. Stimson if he had no intention but to point the advantages of that instrument. The peculiar circumstances under which the address was made, at a time when world attention was being directed to the Manchurian case, to China and Japan, and to the forthcoming League meeting for reception of the Inquiry Commission's report, all unerringly put one construction upon Mr. Stimson's aim. And that construction was that while he was speaking of the Briand-Kellogg Pact he really intended that his international audience would apply his references to the League Covenant.

Inasmuch as the forceful instrument of the Briand-Kellogg Pact only can lie within the clauses of the League Covenant we are forced to associate his words with a warning and an admonition. A warning to some one nation, transgressor or aggressor in Mr. Stimson's eyes, and an admonition to the united nations that they should prepare themselves to look at this problem in the light of American policy. Or rather in the light of American policy as Mr. Stimson conceives it, which may not be American policy at all.

The Meaning of Sanctions

Take the matter of the warning. If there is to be blockade of Japan or China—whichever is found guilty and must be made to conform to the League decision—Article 16 directs that the offending nation shall be permitted no intercourse *with any other country*. Russia and the United States are not members of the League. Think of the complications of a three-party world, with one outlaw nation, one group of nations attempting to discipline her, and another group of nations as neutral as was Holland during the Great War. And imagine how increasingly difficult would be the case if, instead of a blockade there should be punitive action by armies and navies, with the likelihood of certain nations, including Germany and Italy, seceding from League partnership. First thing we know this forceful instrument will have us all moiling around in another world war to end war. The warriors sincerely are trying to avert conflict, but the pacifists will have us in it yet. Instead, therefore, of covert references to the League Covenant and Article 16, obliquely through the Kellogg Pact as a forceful instrument, we should think American policy better interpreted if the term "peaceable instrument" were employed.

The next point about Mr. Stimson's address which will excite unfavorable comment in the United States and abroad is his statement that thirty-seven nations had joined the United States in urging both Russia and China to settle the 1929 dispute peacefully and thereupon "the Russian troops were withdrawn after penetrating nearly 100 miles into Manchuria." Here Mr. Stimson exposes his department and his nation to mild ridicule. Most people will remember the facts of the Russo-Chinese war of 1929, and of the Stimson fiasco which permitted Soviet Russia to administer a caustic dressing down to the Secretary.

The facts are these: While Russia and China were negotiating for a settlement of their own problem, without third-party interference, the United States Government (Mr. Stimson), on December 2, forwarded a communication in formal terms to China and Russia, the latter's note being through the French Government, as Uncle Sam was not on diplomatic speaking terms with Ivan. The note solemnly called the attention of the two governments to the provisions of the Briand-Kellogg Treaty. It suggested that other countries should follow the American lead.

Moscow's answer was prompt, forceful and so final that Mr. Stimson was thoroughly squelched. That answer always will be remembered as Russia's famous "mind your own business" retort to unwarranted interference. The people who got the most thrill out of the retort probably were the Americans themselves who have no false ideas about the merits of some of their well-meaning but misguided politicians. Russia said, "The move of the United States, since direct negotiations have been started, cannot be regarded as a friendly act." Further it reminded Mr. Stimson that the Kellogg treaty did not confer upon any state or group of states the function of "Pact Protector." Thus crushingly snubbed Mr. Stimson might have been expected to step warily in

future, but here he is right back again in the self-appointed rôle of "Pact Protector." His undignified action, funny in 1929, now is irritating and hurtful to the dignity of American foreign policy.

Where It Hits Japan

Mr. Stimson's remarks before the Foreign Affairs Council, associating the nations involved in the Manchurian affair with the Kellogg Treaty, and admonishing all nations to notice it, will be accepted as another evidence that Mr. Stimson regards the world as incompetent to uphold the dignity of the "Treaty for the Renunciation of War," without his help.

The clause of the Stimson speech which excites special antipathy in Japan, and is widely accepted as unnecessarily provocative, is this, paraphrased by the Press, referring to the United States note to Japan on January 7:

"It was appealing," he said, "to a new common sentiment and provisions of the treaty as yet not tested. Its own refusal to recognize the fruits of aggression might be of comparatively little value to an aggressor," but when the entire group of civilized nations took their stand besides the United States, the situation revealed its true sense.

"Moral disapproval," Stimson declared, "when it becomes the disapproval of the whole world, takes on significance hitherto unknown to international law. For never before has international opinion been so organized and so mobilized."

There can be no doubt whatever that when the speaker said aggressor, he meant Japan in the Manchurian incident, whose fruits of aggression are presumed to be the territories north of the Great Wall. Mr. Stimson herein prejudges a case still on trial, does so at an extremely critical time, employs somewhat offensive language towards a nation which all along has pleaded self-defense and backed the plea with considerable evidence. He attempts to place the United States in the position of moral leader to other signatories of the Kellogg Treaty which will be resented as much by the American people as by the rest of the world. Can we escape the implication that the organization and mobilization of international opinion so far has been the result of Mr. Stimson's activities, and that he expects the world to keep right on falling in line? Somebody has to "Protect the Pact," but we believe Mr. Stimson ought to assume that the protection will be done jointly, spontaneously, and not necessarily with unmasked leadership.

"Dangerous Mr. Stimson"

It has been shown herein that in the ardour of his crusading Mr. Stimson is at times prone to error. In Washington those who love him for his undoubtedly distinguished qualities and those who hate him for what they deem to be his frailties have given him the odd nick-name of "Wrong Horse Harry." This may not be kind, but it does seem to have a certain degree of appropriateness. Without doubt it is to be gathered from his words that he himself believes implicitly that all the sixty-two signatories of the Kellogg Pact, the League of Nations, and the world in general, all support his utterances. This does not seem to square exactly with the known facts, for even in his own country opinion in his support is a long way from being unanimous. To prove this one may choose at random from a considerable volume of American editorial opinion. Under the heading "Dangerous Mr. Stimson" one reads in the "New York City News" of August 10 as follows:

For Col. Henry L. Stimson, Secretary of State, we have every respect as a man, a conscientious citizen, an able lawyer, a gallant soldier. We have no doubt that he has great ambitions for his country and for the happiness of the world.

And yet we think that as Secretary of State Col. Stimson is the most dangerous man in the Hoover government.

We think this because of Mr. Stimson's ironclad custom of telling other countries what and what not to do, chiefly in the matter of making war.

We don't know whether Mr. Stimson is a dry or not (he wouldn't tell Mr. LaGuardia some months ago); but, like most pacifists, he has the prohibitionist mind when it comes to war. He doesn't like war. Therefore, Mr. Stimson insists on telling others they shall not fight. And by doing so he is dragging us ever closer to the day when some fighting

cock of a nation will knock the pacifist chip off our shoulder and say, "Well, so what?"

Mr. Stimson has just picked again on the twentieth century's prime fighting cock, Japan. In a provocative and inflammatory speech delivered Monday evening in New York, Col. Stimson once more raked Japan over the coals because of Japan's Manchurian conquests. He went on to intimate that the United States would lead most of the other nations in an attempt to make Japan halt and retreat, if Japan wouldn't do so voluntarily.

That is another objection we have to Mr. Stimson—that he always nominates the United States to take the lead in these crusades for world peace. And he always makes his provocative remarks out loud and for world-wide publication. Discretion seems not to be in him. He lacks the tact of MacDonald, the finesse of the late Briand.

* * *

Col. Stimson in this same speech illustrated the amazing inconsistency of the single-track pacifist mind. He reiterated his statement of last January that the United States would recognize no changes brought about by force in Manchuria. Well, how did the United States get its territory? We killed off the Indians. We fought England. We fought Mexico for Texas and part of California, Spain for the Philippines. We even tried to capture Canada twice—but unfortunately failed. Do we have to give those territories back under the Stimson doctrine?

No, we don't. For it is this same Col. Stimson who insists that we shall hold onto the Philippines, our weak salient and our great war-bait in the Far East. And it is this same Col. Stimson who strings along with President Hoover on the proposition that, instead of building up our Navy to enforce the Hoover-Stimson will to peace on the rest of the world, we must tear our Navy down. It is far less than Britain's now, and inferior to Japan's in battle strength on the Asiatic side of the Pacific.

* * *

Could any foreign policy be more foolish, more dangerous? We can imagine none that could be; or that could be better calculated, if persisted in, to drag us into a war some day to the great surprise of most of us. For most of us take no interest in Mr. Stimson's well-meant efforts to make old Mr. Kellogg's dream of world peace come true. This writer, for instance, read the ponderous Stimson Monday night speech only out of a sense of duty, and in order to be able to write this editorial.

But the unnoticed Stimson goings-on are probably the most important, because the most dangerous, things being done in this country today. And as we have remarked before, one strong argument against voting for Mr. Hoover is the probability that Henry L. Stimson will go on being Secretary of State if Mr. Hoover is re-elected.

What the Tribune Says

Regarding Secretary Stimson's New York speech the conservative "Chicago Tribune" publishes on August 15 the following editorial:

The implications of our secretary of state's address on the Kellogg-Briand treaty were so certain to offend Japan that we must assume that he was prepared to accept such consequences as will emerge from that utterance, although the first excitement has moderated. Such of the American public as are interested in our international relations in a practical sense may not share Mr. Stimson's willingness. Some of these at least, and we confess to being of their number, prefer that the secretary of state had selected another occasion and another recipient of his admonition than Japan, a nation of formidable power, having important relations with us, and committed to a course of policy offensive it would seem to the present government at Washington, but regarded at Tokio as of vital concern to the welfare of Japan.

Japan is in Manchuria and we may suppose does not propose to get out because she lacks the blessing of Mr. Stimson. Her government, we are confident, does not share his estimate

of the epochal results of the Kellogg-Briand treaty nor his implications from that estimate. Mr. Stimson declares that war, or, in other words, the use of military force, "has become illegal throughout practically the entire world" and "is no longer believed to be the source and subject of rights." But Tokio will not greatly fear that Mr. Stimson will gain much support among the governments of the great powers for a doctrine which would discredit their title to the territory taken from the defeated nations in the late war, to the German possessions in Africa and the Pacific, to the Polish corridor to Trieste, Fiume, and the Tyrol, etc. It is true these were taken before war became illegal, but after all a treaty which by Mr. Stimson's hypothesis is to be made effectual by the "combined weight of the opinion of the entire world" can hardly be limited by a merely legal distinction. If there is such foundation in the conscience of the world as will sustain and effectuate the treaty of Paris, the acquisitions of the victors in the late war are sadly lacking in moral support and certainly must embarrass the governments upon which Mr. Stimson must rely for rendering the Japanese acquisitions untenable.

But, whatever the fate of Mr. Stimson's ardent expectations may be, we can be certain of one thing and that is that the relations of the United States and Japan have entered another period of strain and perhaps dangerous friction. If Americans regard experience at all they will realize that it is under such gradual and accumulating irritations that wars are made, and they will not permit idealistic aspirations to obscure practical probabilities. They will also understand that American policy, or at any rate the conduct of our foreign affairs by our government at this time, has placed us athwart the cherished ambitions and purposes of a powerful nation, a nation which does not share our government's zeal for altruistic experiment, but is bent upon making the utmost use of every opportunity to advance what it profoundly cherishes for the profit and progress of its own people.

And, parallel with this realization, they will, if they are wise, consider the fact that, as our intervention in Asiatic affairs develops, another activity of our diplomacy is progressively weakening our means of making our policy effectual or our rights and interests respected. We think such a course must inevitably produce disaster. The American people are not wise if they allow this consideration to be disregarded or postponed because of Mr. Stimson's somewhat premature announcement of the arrival of an era from which war has been forever banished by the "combined weight of the opinion of the entire world."

Stimson's Discourse

The Detroit, Michigan "Free Press" in its issue of August 10 discusses the Stimson speech editorially as follows:

Henry L. Stimson has his strong points as a statesman, but since becoming Secretary of State he has shown some tendency to say things that have indicated haste more than wisdom. Mr. Stimson spoke quite freely when the imbroglio at Shanghai was in progress and created resentment in Tokyo it was unnecessary to arouse. In addressing the Council on Foreign Relations in New York Monday he again uttered remarks that were superfluous and may easily tend to increase an already sufficient strain on American-Japanese good understanding, without accomplishing anything that could not have been accomplished through more restrained statement.

Some of the Secretary's sentences as reported in the dispatches seem to be openly condemnatory of Japan's conduct in Manchuria, and regardless of what Geneva may declare on the subject there are two sides to the Manchurian question and Japan is in a position to put up a substantial argument in justification of the course it has followed. Tokio does no more than should have been expected when it sends to its Ambassador in Washington for a copy of the text of Mr. Stimson's speech in order to get a precise knowledge of what he said and intended.

Geneva appears to be highly interested in the Secretary's remarks about neutrality. The evangelistic, not to say hysterical, tone discernible in this section of Mr. Stimson's discourse leaves room for hope that he did not intend quite

all he seemed to assert. There is no evidence that the United States was ever specially appointed by God to be a judge between other Nations that get into a quarrel, or to take side in every international row which may arise, in order that the righteous shall inherit the earth and the wicked be sent to their own place; and the further the Government in Washington keeps away from any idea that it has a special judicial mandate from the Almighty the better.

It will be well for Mr. Stimson to remember, too, that this Country is not yet a member of the League of Nations, and probably never will be; and that the Kellogg Treaty provides for neither penalties nor sanctions, but is purely a gentlemen's agreement, the question of conduct under it being entirely a matter of conscience with each individual adherent.

"Silence is Golden"

"Silence is Golden" is the subject of an editorial on the Stimson speech which appeared in the Seattle, Washington "Times" on August 10. It follows:

That indefatigable speechmaker, Henry L. Stimson, the American secretary of state, has stirred up a small size hornet's nest by a somewhat amazing speech which Japan has displayed a disposition to interpret as implying it was the aggressor in Manchuria, restrained only by public opinion mobilized against it by the United States and the League of Nations.

Secretary Stimson is quoted as having said, among other things: "Moral disapproval, when it becomes the disapproval of the whole world, takes on a significance hitherto unknown in international law." His comment was made in extolling the Briand-Kellogg pact, designed to substitute peaceful for military agencies in the settlement of international disputes.

The peculiar circumstance is that public opinion in this country never vocally has expressed itself very strongly either in favor of or opposed to Japanese policies in Manchuria. In point of fact, the average American knows little about the issues involved there and probably cares less. The one thought actually expressed during the time when Nippon was conducting its quasi-war on the mainland was a determination that the United States should not become involved in any controversy necessitating the use of armed forces.

There is ground for a belief that the American people are getting "fed up" on professional peace propaganda. They are pacific enough—if not unnecessarily affronted; but they are no more disposed to back away from a ticklish situation than are the people of Great Britain, France, Japan or any other country. A contrary attitude sometimes seemingly is indicated by the speeches of political leaders; but the latter have no mandate from the country for expressions of that character.

As a matter of fact, it might be the best possible thing for international peace if American spokesmen dilated less frequently and ardently on the subject. The spectacle of the United States ready for war, but generously willing always to forego martial arguments in order to promote international good will, could not fail to exercise a salutary influence on foreign governments and their political representatives.

"Stimson Hurls His Monkey-Wrench"

The speech at New York of Secretary Stimson is dealt with at length editorially by the Columbia, *South Carolina State* of August 13. This carries the title, "Stimson Hurls His Monkey-Wrench" and is worth reproducing in full as follows:

Secretary Stimson again exhibits his Japanese phobia and pictures himself in the press in the act of hurling another of his famous monkey-wrenches in the midst of the delicate mechanism of our Far-Eastern relations.

The violence of the denunciation and its being uncalled for and unsuggested by any immediate occurrence or utterance naturally irritates Japan to the point of vigorous protest. Tokyo has called for a detailed report of the Secretary's exact language.

This may be the last straw that will break the camel's back, and Japan may feel justified, by this evident appeal

to the white or Caucasian nations to line up with big America against Nippon, in withdrawing from further participation with Europe and America with the league against her for imitating the United States' bad examples of annexing alien soil.

The manifest, almost humiliating failure of the latest armament conference, which Stimson and Hoover were so certain of sweeping off its feet by the one-third-reduction proposal that did not at all fit in with European ideas and fell far short of the offers of Italy, Germany, and Russia, may have stung Colonel Stimson into trying to divert the attention of the world from America by a swift and totally unexpected attack upon Japan's policy in Manchuria, a policy and incursion that we could have anticipated by any number of precedents. It is amazing how any of the big plunderers among the nations could have the effrontery to charge a neighbor with committing a crime against international law and the comity of nations and the natural freedom of men which each of them has battened upon for generations.

The logical French have taken the view that Stimson was making a mere gesture of good will "to fill the gap existing in the general anti-war pact"—the Treaty of Paris. Possibly they refused to accept the brusque and sudden attack as unfriendly to a neighbor.

But the Secretary of State imagines that he has discovered something new or hidden in the Briand-Kellogg pact. He says that the Briand-inspired treaty implicitly provides for consultation among its signatories to mobilize moral disapproval of any acts of aggression. Yet when France suggested consultation among the nations this government indignantly spurned the Gallic plea as unnecessary, perhaps regarded it as cowardly caution.

It is seriously to be doubted if the Pact of Paris authorizes such consultation for concerted rebuke and outlawry as is discovered in a late remorse of love by Mr. Stimson. It certainly gives no single power the authority now assumed by Secretary Stimson for the United States, to "denounce them (the warring governments) as lawbreakers." This could be legally done, we infer, by the signatories jointly, and not by any one of them acting absolutely alone.

The aggressor is not always easy to detect. Stimson says that one or both must be wrongdoers. The victors at Versailles made Germany admit "war-guilt," but since Versailles many leading thinkers among the Allies have come to the conclusion that Germany was not alone guilty; all were more or less guilty and lawbreakers. Very soon Germany will be declared not solely guilty of making the World War. That is coming along with cancelation and other concessions to the Reich.

Dr. Nitobe, one of the foremost thinkers and leaders of Japan, said at the Williams Institute that Japan, so long as she is menaced by Russia, cannot be certain of her national existence; and that no treaty ("scrap of paper," in the German view) would be allowed to force starvation or extinction upon a people.

Again, this idea of "consultation" is not a landfall for Secretary Stimson, or for Mr. Hoover, or for both. It is called for by the Democratic platform adopted by the convention at Chicago . . . a "consultative pact" to be used to supplement arbitration, etc. It was implicit also in the Wilson notion of "peace without victory." Of course Mr. Stimson, using the "WE" in "we denounce them as lawbreakers," may have meant only the "editorial we," or Stimson solus, or at most "me and Herbert." But to the baited and harried Japanese, it must have had the ring of arrogant assumption of the spokesman for the human race, including the hated and feared League of Nations.

Japan knows that Washington has no authority to speak for the signatories of the Briand treaty, and certainly not for the League; but would like to know "whose part he presumed to play just now"? The Briand anti-war ideal is the child of the League of Nations.

The historians will trace the idea . . . of peace without victory, no war booty for the conquerors, the outlawry of war and agreement among neutrals to stop any war that is being prepared by imperialists and warlords . . . back to Woodrow Wilson, and not to the anti-League and anti-Japan Secretary Stimson.

The working majority of nations may declare as outlaws all nations that make war; but they will hardly leave that delicate procedure to a statesman who so often bet on the wrong horse, and failed to distinguish between the rebel and legitimist, even in rather obvious instances.

Japan, Stimson or no Stimson, really has no standing in the League, as now constituted. The cards are all stacked against her.

"Stimson vs. Washington"

The Camden, New Jersey "Courier" of August 11 publishes the following editorial under the title "Stimson vs. Washington":

Has the United States forgotten the lesson it was supposed to have learned through the World War?

Has our government forgotten repudiation of the League of Nations by our people?

Have we all forgotten the warning of George Washington against entangling alliances?

To read Secretary Stimson's speech on the Kellogg Pact, particularly its references to the Far East situation, one would think so.

Mr. Stimson again places Uncle Sam in the role of Sunday School teacher to the world.

We set out to make the world safe for democracy in 1917. Did we do it?

The answer is in the dictatorships in Europe, the impending restoration of the Hohenzollerns.

In 1924 we set out to save Germany from collapse. What is the result?

We are billions in the hole, Germany is not saved, her old Junkers are in the saddle—and we have no surety that we will collect even on Germany's private debts.

In 1931 we set out to save Great Britain, to keep her on the gold standard. We granted huge loans. What result?

Great Britain is leading the League of Debtors in a veiled but none the less concerted plan to force war debt cancellation.

* * *

The American people, unless we err, are fed up with such altruism.

This slap at Japan, however much Japan may deserve it, is one more foolish effort to play moral policeman to the world.

If Japan, in reply, cites our activities in Nicaragua, our seizure of Panama, our tariff hypocrisy in the Philippines, it will serve us right. In tossing bricks of admonition, the State Department has forgotten that our own house is partly built of glass.

As for Mr. Stimson's proposal to tie America in with Europe for "consultation," on questions arising under the Kellogg Pact, it is one more scheme to put us into the League of Nations through the back door.

If we obligate ourselves to "consult" with European powers on major questions, we will be irresistibly dragged into any arguments and conflicts which result.

American meddling in foreign politics has gained us nothing but ill will. It has lost us huge sums in hard cash.

Playing upon Uncle Sam's well-intentioned idealism, shrewd diplomats of the older school have, in an elegant parlance, played him for a sucker.

If there is any lesson which post-war experience should have taught us, it is this:

To mind our own business.

That we have all to gain and nothing to lose by following the principles which George Washington expounded so long ago—and which have gained in force through the years.

"Leave It to Mr. Stimson"

An editorial entitled "Leave It to Mr. Stimson" taken from the Chicago, Illinois "American" of August 13 and published generally by the Hearst chain of newspapers in the United States is as follows:

LEAVE IT TO MR. STIMSON

He can always be trusted to get us into trouble with other countries, and, if there is no trouble, to make it.

The other night, over the ether, the Secretary of State expounded his latest doctrine of entangling ourselves in foreign affairs.

The doctrine means that if two nations disagree, we must rush into the dispute, along with as many other nations as happen to be in the mood to interfere.

If no others do, then we must rush in alone.

That's the gist of it.

The Stimson doctrine would interest George Washington, who warned us against the very thing that Mr. Stimson now proposes.

We did well while we followed the Washington doctrine. We did not do well when we departed from it.

Ask the bonus marchers—what there are left of them—about that if you want a frank opinion.

And you may have noted that the first reaction to Mr. Stimson's speech comes from our one-time friend and always powerful Pacific neighbor, Japan.

Japan immediately wired its ambassador for a copy of Mr. Stimson's remarks.

It will base a protest on them.

The protest may be in print by the time you read this.

No American thinks highly of Japan for seizing Manchuria from China.

But no American wants to get into that mess.

It's on the other side of the world, and all we would get out of it would be the loss of good American lives, good American ships, the Philippine Islands and possibly Hawaii.

The game is not worth the candle.

But leave it to Mr. Stimson, and that is the game we will be playing one of these days if we don't look out.

Mr. Stimson is a good, conscientious and well-meaning man.

So was Happy Hooligan.

A Plea for Manchukuo

Why the sympathetic support of the world should be given to Manchuria in its move for nationhood, why this is the logical solution of the Asian problem, and why China will benefit in the long run

By **GEORGE GORMAN**

AN irresistible argument in favor of world support for the new nation of Manchuria is that it already exists. It cannot be put out of action without infinitely more trouble than the sorely worried world is willing to face. Opponents of an independent Manchuria might attack this type of logic by maliciously asserting it would be equivalent to condoning

murder because the victim cannot be resuscitated. Yet it is true that the good of a new nation in the north far outweighs the bad, however Manchukuo was conceived. The medicine for Manchuria may not be what the League doctor ordered, but if the patient improves under it a change of prescription would be questionable advice. If the nations acquiesce in the situation as it is, there will

be no offence to reason, to justice nor to practical politics. If they attempt to suppress the State of Manchukuo, and insist upon handing the territory back to China, there will be further revolution heaped upon a chaotic continent, with the risk of the fire of dangerous discontent consuming the whole of Asia. There is fair prospect of permanent peace in recognition of Manchuria, or Manchukuo. There is certainty of war in any restoration attempt.

The realities must be faced in this Far Eastern problem. And the reality is that a new nation actually has been created. A native government has burgeoned. All ties have been cast off from China proper. Vast enterprises have been launched in consolidation of statehood. A teeming population has begun to accept the new situation and to see much hope in it. Chinese opposition largely is fomented by such parties as the old warlords, and the politicians intent on diverting attention from the awful state of affairs in China itself.

Repudiation of this *de facto* situation once more would plunge Manchuria into aggravated disturbance, besides intensifying the Japanese problem.

Supposing the League advise the world to ignore Manchurian independence. Supposing the League says, "Restore the *status quo ante*." How will the world go about giving effect to the counsel? By direct intervention with armed forces? By coercing Japan to withdraw her military support, using the economic blockade? By some sort of a financial boycott of Japan? All methods are feasible on paper, but desperately hard in practice.

On the other hand, supposing the League counsels a wait and see policy. It might advise a period of three or five years for the situation to adjust itself, for China and Japan to get together, for the native peoples fully to weigh their own position. Or the League could describe this independence as a legitimate case of self-determination, even though Japanese protection was afforded the infant state. In either case the League advice would be "Hands off!" And the result? Chinese opposition? Not necessarily. Not permanent. Not beyond the professionalism of the politicians of narrow vision. Not more serious than the feeble efforts of warlords and exploiters to win a profitable territory back again.

The world has a habit of dealing in a practical way with realistic problems. Which of the two roads is it likely to take, the extremely difficult one of intervention, with the idea of forcing the people of Manchuria back into the arms of a mismanaging China, or the comparatively easy path of acquiescence in the present state of affairs which is demonstrably better for the people of Manchuria?

China Would Gain in the End

Much better for China too, for she would have the satisfaction of seeing a son grow up and prosper in the adjoining house, a newer house where the great Chinese virtues of patience and industry would bring their inevitable rewards. And does it really matter whether the sons of China develop in partnership with Manchus and Mongols and Japanese and Koreans, so long as they are freed from the hopelessness so evidently their lot under maladministration from Nanking or Peking? China can take satisfaction out of the prosperity in Manchuria, saying, "there go our own people under their own government."

When this realistic choice of programs is placed before the world, the question of morality at once will be raised. We will be told at length and with some asperity that the territory of Manchuria was torn from China by Japanese military force, that the nations would be destroying the League Covenant and the Briand-Kellogg Treaty if they were to take a cynically complaisant view of a present good arising from a past evil. The point inevitably will be advanced that these international treaties were designed expressly to prevent what has occurred (meaning the methods), and that international arbitration must give place to the old right of might if Japan and Manchukuo are upheld in their action.

In answering this argument we should leave the government of Manchukuo out of it. They are committing no sin in declaring their independence. They are fully justified by the sanctity of self-determination. What is much more effective, they look to their own right arm and decline to ask permission of the neighbors for what they do, a right as old as Adam. The Japanese only are involved in this question of right or wrong methods in the Manchurian adventure. That being so we have to inquire if the Japanese really broke the spirit of the treaties in Manchuria.

Japan can show that the League Covenant is not imperilled by her occupation, and that the Kellogg Pact was not violated inasmuch as the right of self-defense was not curtailed by it.

Japan can prove that she was forced into military action by aggression instituted by Chinese warlords which imperilled the safety of the islands as well as hard-won treaty rights on the mainland. She can show with good reason that her intervention had to be extended for the purpose of ensuring protection in the future. Japan is able to convince whoever is willing to listen to both sides of the case that the independent government, although assisted, was not projected by Japan and will not be a tool of the future any more than it is a puppet now.

If Japan can show justification. If the independence of Manchuria is a *bona fide* native movement growing out of opportunity, as a revolt against the terrible exploitation of Chinese warlords. If the maintenance of the present situation by world opinion is proven to be the only reasonable course. If there is real hope in an independent Manchuria, and black despair in a China-governed Manchuria. If the non-aggression treaties are shown to be intact despite the *appearances* of violation by the Japanese. If the *status quo* means peace and the *status quo ante* ensures war, either between nations or between groups of people of equal racial stock. If these conditions are explained to the satisfaction of the world, we believe the League must vote against further complicating the issue and against additional outside interference leading to a snarl that nobody can unravel in a century.

Manchuria Definitely Not a Puppet

Puppet is a good word. It sticks. Enemies of Manchurian liberty have been wise in their slogans, just as the Nazis in Germany have been clever in their symbols. Manchuria, a puppet state, is a good mouthful, but it isn't true. Manchurian independence was not conceived in the brain of Japan nor is the enslavement of the new state planned. I cannot know the inner councils of the Japanese government, but I have been in close touch with developments in Manchuria since September of 1931 and can fit the pieces together as well as the next man.

It is inside history that the independence plan was formulated by Chinese and Manchurian political leaders. It was an outgrowth of the monarchist movement. While the Japanese soldiers were consolidating their defenses in Manchuria, and while Japanese statesmen were considering what to do next, the monarchists were busy in Tientsin, Dairen and Mukden. Before approaching the Japanese they held many secret meetings. In due course Mukden became the headquarters of the restoration party in which some Koreans were concerned. The Japanese were not cognizant of what was going on until the monarchists had a proposition ready. The monarchists worked out their plan in the home of a Chinese widow, "Wang Tai Tai," at Mukden; Madam Wang, by the way, was an old friend of the late Marshal Chang Tso-lin. At first the princes and mandarins at their very secret meetings proposed a *coup d'état* without Japanese connivance. The scheme was to declare a restoration of the Manchu House in the racial home of the dynasty, Manchuria, Mukden. As the royalists saw it, the Japanese only were concerned in defeating the forces of Chang Hsueh-liang, and in due course would retire to the railway zone. The Japanese got wind of what was going on. They couldn't help finding out, so clumsily were the proceedings arranged, and so lacking in harmony were the monarchists themselves; there was failure to agree even as to the person of the restored emperor, three principal candidates being advanced, including Hsuan Tung and Prince Kung. The Japanese did not squelch the movement at once. They were not yet certain what to do about the future peace of Manchuria and the protection of their own rights, which were all they wanted. Much thought must have been given to the proposition, and I believe, from what royalists themselves told me, that the principal point of Japanese opposition was the absence of any discernible public enthusiasm for a return of the monarchy at that time. Japan was not convinced that the people would acclaim a sovereign.

Alongside the monarchist movement grew up a constitutionalist party, also operating in secret. These people wanted a monarchy too, and a Manchu dynasty, but altered to agree in pattern with the British constitutional system. When the royal agitators found no sympathy for their plans, and saw the futility of a coup on their own, they consolidated with the constitutionalists, and out of this

agreement grew the independent government as we now see it. The monarchists, by insisting upon the inclusion of Hsuan Tung (Mr. Henry Pu Yi) in the leading governmental rôle, and upon important places for monarchist stalwarts, were looking ahead to a better opportunity for fulfilment of their dream. The constitutionalists thought that by contriving a democratic government at the outset, with a deposed sovereign at the head of affairs, they had an ideal groundwork for their plan.

Help of Army Necessary

At this stage of the proceedings the independence movement reached a stalemate. It could do nothing without the Japanese. The traditional method of the *coup d'état*, seduction of the native army, was closed. There was no army, except the Japanese. There was nothing to do but admit some Japanese to the councils, and with their help the independents eventually developed a modified scheme as it now exists in maturity to which official Japan gave tacit consent. A great deal of preliminary work had to be done in the way of approaching native leaders, some of whom were under Japanese surveillance. The whole plan took five months to develop, and when finally it was presented to the Japanese command with a request more for non-interference than active participation, it had all the appearance of a reasonable solution to the Manchurian problem.

As to the nature of the final understanding between the Japanese and the Independents I have no knowledge, and can only assume that the embryo native government was required to promise that there would be no more shenanagin with treaty violation, that Japanese interests would be safeguarded, that Japanese peace projects through the use of the military arm against bandits would be permitted. Indeed this bandit campaign and frontier protection scheme actually was invited by the native government.

The government found itself lacking organizing brains. The task of creating a new nation required assistance, and the Japanese gave it. The government of Manchuria was born. The native people were afforded the protection of the Japanese army in taking over the domestic government so far carried on by emergency councils in strategic parts of Manchuria. Japan was presented with a reasonable solution and the people of Manchuria were given a chance to have their own people at the head of affairs.

Advisers not Japanese Servants

The use of Japanese advisers, and Japanese official assistance in various ways have been interpreted as indirect Japanese control of the whole country. Anybody who has been in close touch with the Japanese advisers will know that definitely, emphatically, they are not part of the Japanese government organization. They are more Manchurian than the Manchurians in many cases. I will tell you one instance, easily authenticated.

Chuichi Ohashi was Consul-General for Japan in Harbin. He had decided to leave the diplomatic service *before the outbreak*; he wanted a new line of work, with more personal punch in it. During his stay in Harbin, which was only a short one, he became friendly with Chang Ching-hui, the governor of the Special Administrative Area under Chang Tso-lin and his son. Chang Ching-hui was won over to the independence movement. He asked Mr. Ohashi to become an adviser. The Consul-General accepted. He, like the governor, saw in this movement something inspiring, progressive and liberal. Resigning his position, giving up the safe for the uncertain after fourteen years of service, he joined the Manchurian government. I am prepared to stake all I know of human nature that Ohashi is heart and soul with the Changchun government, and actually is *persona non grata* with the Tokyo Foreign Office. His old mates of the diplomatic service, whom he personally loves, are now his diplomatic opponents. The name Ohashi is not popular in the *Gaimishu*, for, knowing well the diplomacy that was taught to him, he has turned it over to the use of the new Manchuria.

Ohashi is adrift from his own official people. He has no status in the legations and consulates of foreign countries despite his post as deputy minister of foreign affairs for Changchun. This ardent independent has every man's hand against him (except Manchukuo's), but he is sustained by his belief in the right of his cause. I can say, who know him well, that Ohashi changed an eiderdown existence for a hard bed in the new capital, where there are no

amenities of life, where there is practically no social round, but merely a daily drudgery in the construction of a new nation in the face of an overwhelming opposition.

There are many Japanese like Ohashi at Changchun. Not one of them but would take a whirl at any who accuse them of working for a puppet government. Then there is the somewhat different case of Dr. Komai, the principal official Japanese adviser, a most talented official. When he was appointed it was most necessary, for the native government as well as Japan, to have someone of experience close to the Manchurian cabinet who could advise them on realities, on the science and practice of government, on finances, and on general policy as it would work harmoniously with Japan. Whether or not Dr. Komai, really an enthusiast for the new state, was more enthusiastically a Japanese than a Manchurian is not known, but it is stated that he didn't work well with the members of the Manchurian cabinet, and his recent return to Japan really was inspired by the Changchun government as a means of providing a little reflection which would bring him to understand that Tokyo and Changchun were agreed on an autonomous policy. Manchuria was to be the civil power, and advisers were to be reminded that advice need not be too severely applied, and not necessarily accepted.

Second Phase of Japanese Policy

It is really remarkable to notice the delicacy with which Manchurian questions are being dealt with by the Japanese authorities. There is extreme reluctance to interfere in such spheres as legitimately belong to the native government. I am informed that the new Japanese vehicle in Manchuria, the embassy under General Muto, consolidating the functions of Kwantung Army, Kwantung Government, South Manchuria Railway and Consulates under a single command, has another definite mission. And that is to introduce the second phase of the new Japanese movement in Manchuria. Under this new system the policy will be more quickly and harmoniously to transfer the task of keeping the peace in Manchuria from Japanese to native hands. Moreover the necessarily harsher features of emergency military control gradually will be eliminated and the Japanese attitude *vis-à-vis* Manchuria transferred from a military to a diplomatic basis. This will accord well with the earnest desires of the Changchun government, and should go far to turn world attention to the real Japanese intentions in Manchuria, which are far, very far, from annexation or indirect control. In this regard a recent visitor from Peking, at dinner with General Honjo, was asked by the Japanese Commander-in-Chief how the foreigners regarded Japanese actions in Manchuria. The visitor told him frankly that they thought Japan was out to annex the country and was beating it into submission beforehand. The general smiled ruefully and then said: "We Japanese are pretty poor at explaining ourselves. We must go ahead with our work and prove to the world that our intentions in Manchuria are just what we say they are."

The honesty of the Manchurian government is apparent in the character of its organizers and ministers. Likewise the prospects of survival may be estimated by the good that is in these men. Plain adventurers could not get very far. The key men of Changchun are of the type that inspire great movements.

Some weak members there may be, but they are overshadowed by the strong. Mr. Henry Pu Yi, the *Che Cheng* (translated as ruler, president or regent), is the legitimate Emperor of China. Personally he is as enthusiastic as he is honest, as sincere as he is truly independent. He told me quite frankly that his real ambition is to regain the throne over all China, and regards the present step in Manchuria as a demonstration of capacity to govern. The opponents of independence are fond of attacking his appearance, capacity and loyalty. I found him lively and intelligent, earnest and sincere. He has great plans and, when put to the plough, has driven a straight furrow. The young man has proved surprisingly capable and hardworking. He is on the job from nine till five, mostly giving audience to his ministers and distinguished visitors. Naturally there must be close guardianship of his person, which gives rise to the old story of the gilded cage. All monarchs and near monarchs have to put up with it.

But the strength of *Hsuan Tung* is his background. After all, he has a history, a great dynasty and a following. The monarchist sympathy is deeply embedded in the Chinese character. The new democracy has not been a howling success in China. Millions trace their present woes to this queer doctrine from the west and

sigh for the good old days of sovereign control. There is substance to the monarchy idea in China, and the Boy Emperor naturally brings to his present position an immense, if voiceless, popular support. All the vituperation from detractors but emphasizes the substance of his far-flung connections.

Sir Reginald Johnston, Professor of Chinese in the University of London, formerly English tutor to Hsuan Tung, says of this 26-year-old Chief Executive of Manchuria:

"He is to-day a young man with all the charming manners of his race and with the keenest interest in the affairs of the modern world. He speaks some English—enough for ordinary purposes—and is well-versed in English and American history; rather more in English history, perhaps, for he is greatly interested in the growth of the English constitutional monarchy. He is an admirer of the Prince of Wales, of whom he has read for many years. Mussolini is another of his heroes....He is slender in build, with small, well-formed hands. His eyes are dark and his expression is thoughtful, more so, perhaps, than is usual in a young man of his age....He has an inherited poetic gift and has written much classic verse and even some of the modern verse....He has a taste for good literature....He has also learned the art of calligraphy from his tutors. This is one of the fine arts in China and his excellence in it has repeatedly won the admiration of experts. He writes English, too, with a very bold and well-formed hand. He has never been taught to draw either in Chinese or in foreign style, but he has a native talent which enables him to produce very vivid and rapid sketches. Perhaps the most noteworthy thing about him—certainly to one who knew the tyrannical conservatism of the old imperial palace—is his readiness to listen to new ideas, his tolerance, the voracity with which he devours the newspapers and his immeasurable advance in familiarity with the social and political worlds of both East and West."

This sketch should dispose of the idea spread abroad by enemies and uninformed persons, of a vapid puppet blindly doing the bidding of Japan. He is an aspiring young man, zealous for the good name of his imperial family, and determined to make a success of his Manchurian "rulership."

Emperor not Japanese Captive

Stories about the Emperor's adoption by the Japanese for some such "nefarious" purpose as the occupation of his present position, about his being held virtually a prisoner of the Japanese since his abdication, are offset by some observations of Mr. H.G.W. Woodhead, C.B.E., the distinguished Editor of the *China Year Book*, writing in the *Shanghai Evening Post and Mercury* to clear up some inaccuracies in a contemporary article:—

"It is quite untrue that while he was 'in hiding the Japanese seized this opportune moment and offered him asylum at the Japanese Legation.' When restrictions upon his freedom had been modified to the extent of permitting him to move round Peking under a Kuominchun escort, his British tutor, Sir Reginald Johnston, contrived to get him into the Legation Quarter by a ruse, and then informed his escort that their services were no longer required. The Emperor was lodged in the German Hospital while efforts were made to find a refuge for him, and the first application was to the British Legation. It was only when it was found that there was no building there available for the Emperor's use, that his Tutor applied to the Japanese Legation, which agreed to place a small building in the Legation Guard Compound at his disposal. It was equally untrue that the Emperor was 'spirited to the Japanese Concession in Tientsin.' His escape from the Japanese Legation came as a complete surprise, and was an extremely hazardous adventure. For the Emperor, who had never travelled by train before, found himself *en route* to Tientsin, in a third class compartment, between two of Marshal Feng Yu-hsiang's soldiers. As soon as his flight was discovered the Japanese consular authorities in Tientsin were notified, and he was met and escorted to a hotel, on arrival. The Emperor had some personal property in the British Municipal Area, and it was his original intention to reside there. But difficulties arose in connection with adequate police protection, and it was only then that he decided to take up his residence in the Japanese Concession."

"It is preposterous to describe him as a 'Betrayal of China.' The Abdication Decrees, signed in his name, embodied a solemn pact between the Imperial Family and the Republic. Every

condition of that pact, so far as the treatment of the Emperor is concerned, has been violated. He has been deprived of his title and dispossessed of his private property; the promised annuity has never been forthcoming; the Imperial Tombs, instead of being protected, have been violated and rifled by Republican troops.

"It cannot seriously be pretended that an ex-Monarch, thus treated, owes any loyalty to the nation or the government over which he formerly ruled."

Nobility of Premier Cheng

Besides Hsuan Tung, the greatest personal asset held by the Manchurian government is Cheng Hsiao-hsu, Premier and Minister of Education. I never have met a man who so quickly aroused the deepest respect, merely by his appearance. Honesty and straightforwardness shine in his face and expression. The idea that this man could agree to a surrender of Manchuria to alien domination is ludicrous. He is a scholar, a gentleman, an enthusiast for the rehabilitation of his country, one of the hardest workers in the new government despite his advanced age, and an inspiration to every one of his countrymen. Chinese and Japanese scholars actually venerate him. His poetical and philosophic works are everywhere read and deeply admired by the discerning. His conception of the way to govern a country would be a lesson for Premiers everywhere. For he contends no government can live unless its officials submerge self for the popular benefit. Sir Reginald Johnston said of this truly magnificent Chinese mandarin:

"His name and reputation stand extremely high in those scholarly circles representative of the 'Old China' of the classical tradition. He is undoubtedly one of the most learned and accomplished men of his generation in China, and is perhaps the most distinguished of living Chinese poets. Cheng Su-k'an (Su k'an is his familiar name) is not only an eminent scholar and poet, but also a great calligraphist...this means that he is among the first of living artists. He is by no means a young man, for he has reached the early seventies, but he is full of vitality and intellectual energy and looks at least a dozen years less than his age. Under the Empire... he received various high appointments, including the post of Chief Justice, first in the Province of Anhui, then in Canton. He also held military commands in South China. Subsequently he became an associate of Sheng Hsuan-huai, the well-known administrator-general of railways."

"He was opposed to the revolution from the beginning, not only because of his devotion to the cause of the Imperial House—with men like Su k'an loyalty is part of their religion—but also because as a Chinese patriot he sincerely believed and still believes that the revolution was a ghastly mistake and a terrible calamity for China."

With these key men at the head of affairs in Manchuria how is it possible for anyone seriously to believe that Manchuria has been sold to the Japanese? The truth is they see in this opening created by the Japanese, an opportunity to restore the happiness of their people.

Other ministers of the government are practical men of affairs who have had long experience in Manchuria and are giving their services, even risking their lives, in the great cause of a new nation. Whoever says they are puppets of Japan, Judases in possession of thirty yen, is blind to the real situation. These men are firm believers in the justice and practicability of an independent Manchuria. Moreover they have faith in Japan's promises to foster a truly native government free of control.

Annexation Merely Nightmare

The world is being encouraged to fear the position of Japan in Manchuria because of a fantastic belief in annexation on the Korean plan, but it must be patent to any unbiased mind that Japan could not expect to make such an ambitious program work to her own profit. If Korea is quoted as a parallel case it equally must be cited as an instance of Japanese failure. For although Japan owns Korea, the possession costs her money, something like Y.25,000,000 a year. It is no outlet for her surplus population, for there are but 200,000 Japanese in Korea against the million Koreans in Japan. Annexation of Manchuria would require permanent military occupation, too costly for the Nippon purse. The Japanese have looked at India too long, and have before them

the manifold difficulties of Great Britain, increasing with the years, to regard the permanent possession of Manchuria as practicable.

But the most convincing point against political control is the peaceful penetration of the Chinese themselves. If Japan owned Manchuria outright, with the world's full approval, the Chinese would take it away from them by peaceful means in a quarter century, even though the Japanese were to try to prevent immigration from China as the Manchu rulers once did. By the incredible power of patient industry, shrewd business ability and cheap labor, the Chinese or Manchurians would envelop the whole of Manchuria, politics, business, finance, industry and all, within a quarter century. We have before us the fact that Chinese domination extends throughout the Pacific Basin, wherever there is peace and equal opportunity for the Chinese. Why not let these insistent forces solve the problem for the world, for China and Japan?

There is little fear that Japanese immigration into Manchuria will balance the Chinese capacity for "reckless procreation," for with all the opportunities which gave Japan a preferred position in the Eastern Provinces since the Russo-Japanese War, the total Japanese population there is only 228,000 and the Korean a mere 600,000, together forming but 2.9 of the total population. We receive the lesson that Japanese protection, Japanese improvements in fighting disease and famine, will but present the Chinese in Manchuria with an ideal breeding ground, an argument for "Hands off Manchuria, let the Japanese manage it" slogan if China but knew it.

How Manchuria's Voice is Heard

The world is asked to believe that the native population of Manchuria does not uphold an independent government. Frankly the native population as a whole is not interested in politics. Above all they want peace and who gives peace is no concern of theirs as a general rule. The only way to arrive at an idea of the native mind on the national status is to reach the ruling classes, meaning the business, trading and political classes, the men with a stake in the country. It would be too much to say that all are for the Changchun government. Many owed their success to the old régime. Their loyalty cannot be won over in a moment. But there is a very large and growing sentiment in favor of the present state because it represents the quickest way to normalcy and prosperity. These people give the vote of Manchuria and there are more in favor of Manchukuo than against it.

Added to this are the phalanxes of monarchists, the native Manchus who see their old ruler again on the throne, to all intents and purposes. They have with them a solid Mongolia. Not a Mongolian, with the shuddery example before him of Outer Mongolia under cruel Russian serfdom, but hails this Manchurian nation as his own salvation. The princes were at the inauguration of the Manchu Emperor as President. They have been attending his audiences ever since. The whole Hsingan Territory has been created a special district under Mongolian native government. The ruling prince is a permanent resident at Changchun, a voluntary attendant on the President. This is certainly the most substantial support in the world and to ignore it is to flout the wishes of 1,400,000 people resident on territory greater than Manchuria.

The bandit-volunteer-insurgent activities against the Japanese have been held up as indicative of patriotic opposition to the invader. To some extent there was genuine patriotism behind the several columns of former soldiers roaming the back country and raiding the railways whenever Japanese vigilance relaxed. The preponderance of semi-military activity in Manchuria, of native origin, has been from the bandit groups. The scourge is as old as the Great Khans and it is nonsensical to believe that the farmers and village folk admire or support it. The biggest sufferers from the activities of the insurgents and bandits have been the Manchurian peasants who were robbed and slain by the thousands. If this is patriotism the Manchurians are decidedly unpatriotic. Ma Chang-shan may have been a picturesque figure to the outside world, but to the people of Heilungchiang who were brutally impoverished to keep him and his soldiers he was merely a major irritation.

Why all this excitement about returning to China something that never was China in later years? From the time of the revolution Manchuria has ganged its ain gait. Chang Tso-lin was monarch of Manchuria. So was his son. The latter hoisted the flag of the Kuomintang as a very clever defensive ruse against Japan. Whenever difficult questions arose with Japan he said,

"That is for Nanking to decide." But whenever issues arose concerning the revenues of Manchuria, he explained "That is purely a local question which I will decide." Although by acknowledging the suzerainty of China the Young General became a nominal part of the Nanking government, in reality he ruled the country just as his father did, and gave to Nanking in revenues just as much as Chang Tso-lin gave to Peking--nothing. He did not interfere with the Customs revenues, probably because he did not think of that. But the \$25,000,000 or so of salt revenues he kept for himself, not even remitting the quota of eleven per cent required to liquidate Manchuria's pledged share of international debt. Therefore the recognition by the world of an independent Manchuria involves no upset of China's revenues, except the Customs income, of which the new nation is remitting to China the quota earmarked for foreign loan services and keeping only that portion which belongs to itself. All these revenues now have a chance of being employed for the benefit of the people of Manchuria as a whole, and not exclusively for the support of a politico-military clique and their rampaging corps of sycophants.

Financial Help Appreciated

The League and its parts will find the financial problem of Manchuria one of immense intricacy if it is intended to undo what has been done. The dissolution of an independent Manchuria would involve the liquidation of the Central Bank of Manchuria, which now is engaged in giving to the nation a unified currency stabilized by an honest bullion reserve. By taking over the assets, such as they were, of the looted banks of Manchuria (looted by the parting hosts), and adding to them a guarantee loan of ¥200,000,000 from Japanese interests, underwritten by the Tokyo government, the Central Bank has been able to prevent the monetary system of Manchuria from going completely to pot.

The old régime issued several hundred million dollars worth of paper money without silver reserve. That system of wholesale pillage is worth a story by itself. The Central Bank, inaugurated by the Changchun government, comprising a combination of Manchurian, Chinese and Japanese bankers, agreed to buy back most of that floating paper at an average of the market price ruling for three months prior to the opening of the State Bank. They issued, or are giving in exchange, new bills, and now Manchuria knows that the currency it holds has silver behind it. This single reform is almost worth the "war." Each day's experience of this type of responsible banking, as compared with the rampallian usury of banking under the old régime, brings more and more thousands of the looted peasantry to the yellow banners of the new government. It will be quite a responsibility for the world once more to permit the introduction of banker-piracy into Manchuria, as would result by the destruction of this hopeful government.

An independent Manchuria, the State of Manchukuo, is the spontaneous creation of responsible native people revolting against tyranny. The masses of Manchuria in this action were represented by self-appointed leaders, it is true. These leaders gave to the millions of Manchuria the honest administration voicelessly desired. If it is argued, as one critic has said, "It is ridiculous to say that 30,000,000 people have formed a new state," we could say the same of scores of sovereign nations. Russia had little voice in its revolution after the Communist rulers had seized power. In this Manchurian case there was a benevolent purpose in seizing the opportunity created by the entry of the Japanese. Determined and public-spirited men formed the nucleus of the State which they created on behalf of the people. They have used the Japanese, and will continue to take advantage of their protection, until they are organized sufficiently to defend themselves and until their administration is so evidently a success that nobody with a mind for world peace and betterment will wish to interfere.

The world will be required to judge carefully in this business. It should not commit the error of intervening to save even the League's face. Determined as all of us are to have the League idea prevail in international control, we must remind ourselves that the League is little older than Manchukuo, and liable to the mistakes, as it is open to the lessons, of youth. The Manchukuo Idea may prove to be valuable material for adoption into the League peace formulae. At any rate the League will find more comfort in giving the new nation a free rein than in attempting to curb its one chance for liberty.

The policy should be "Let Manchuria Alone and Play Safe."

What Will Save the Japanese Yen?

By EISABURO KUSANO

IN the face of the recent dismal depreciation of Japanese money, Finance Minister Korekiyo Takahashi has at last given up his noted non-interference policy. He has taken a definite step to stabilize the yen exchange rate. Details of his stabilization proposal are not available at present, but it is understood that he will exercise a strict control over speculative transactions in the domestic exchange market and he may establish an exchange equilibration fund system. Mr. Takahashi openly admits, however, that there is no "capital idea" to deal with the situation in view of the intricate complications of the domestic and international problems involved. On the other hand, Japan's commodities market has become suddenly active. Prices are going up from one new high point to another. Raw silk, to name one of them, advanced by Y.100 to Y.900 within two days, August 23 and 24, and it is still rising. Compared with the low level in June, this year, this represented a steep rise by more than Y.500 doubling the June figure.

In the meantime, the yen exchange rate is falling. It now threatens to go even below the \$20 mark. The rate has collapsed by nearly 60 per cent during the past eight months. On December 12, 1931, or one day previous to Japan's going off the gold standard, Y.100 was worth \$49½, but it was quoted at \$22 and even at \$21 by the end of August.

And there is no knowing how much more the Japanese yen will depreciate. For its prospects depend very much upon the outcome of the League of Nations Assembly, and also on the presidential election in the United States.

If Lord Lytton's report to the League of Nations proves favorable to Japan and if the League of Nations Assembly approves the steps taken by Japan in Manchuria, and if the United States decides to remain quiescent, the yen exchange rate will go up swiftly. On the other hand, if things go wrong for Japan the nation's economic strength will be put to a test.

Then the yen exchange rate will go down fast. Even then, however, it is beyond the imagination of well-informed observers that Japanese money could go nearly half so low as the German mark at its worst in years gone by. For one thing, economic conditions are altogether different, as may be shown later.

So far, Japanese money has depreciated in four stages following four developments of the domestic and international situations. First, the suspension of the gold standard on December 13, 1931. Second, the outbreak of the Shanghai incident at the end of January, 1932. Third, the assassination of Premier Ki Inukai. The fourth and the most recent factor is the rumor that Lord Lytton's report may prove unfavorable to Japan, and the combination of this with the Government's inflation policy as well as with the domestic political uncertainty tend to add to the uncertainty.

The yen exchange rate was bound to fall when the Minseito's deflation policy was defeated in spite of the desperate defence of it by the late Mr. Junnosuke Inoue, then the Finance Minister. The Seiyukai formed the new Ministry under the late Mr. Inukai at the end of 1931, and Finance Minister Korekiyo Takahashi immediately placed an embargo on gold as a step preliminary to the introduction of his famous inflation policy. Japan's ban on gold, however, was one of the world-wide results of Britain's suspension of the gold standard in September, 1931.

The drastic measure taken by the British Government stimulated the active outflow of specie from Japan. Japanese capital then actually began to escape. It inevitably resulted in a sharp decrease in the supply of funds in Japan's money market. Meanwhile the general purchasing power had waned on account of the universal depression. Under the circumstances, Japan's manufacturing industries were placed in an extremely difficult position, beneath the double pressure of the tightened money market and the general fall of purchasing power.

Finance Minister Takahashi, under the new Seiyukai Ministry, therefore, prohibited the gold outflow in order to save Japan's industry and also to check the escape of capital.

It was said by critics in those days that the Finance Minister took a hasty step. Nevertheless, the Seiyukai had decided on this policy several months previous to its coming into power. It declared as early as in July, 1931, that to suspend the gold standard was the only measure to revive Japan's industrial activity. Japan, therefore, was destined to go off the gold standard sooner or later.

On the eve of the second suspension of the gold standard, the yen was quoted on New York at \$49½. Prior to that, the rate fluctuated within a narrow range of between \$49½ and \$49¼. When the gold ban measure took effect, however, the rate fell by 30 per cent to \$34. In reaction, it recovered to \$43 soon afterwards, and indications were that it might be stabilized thereabout.

It was revealed during the last 10 days of December, 1931, however, that the amount of American dollars sold by the Yokohama Specie Bank was much larger than had been supposed. Japan had to send Y.170,000,000 in specie to America in spite of the fact that Y.135,000,000 and Y.124,000,000 in gold were shipped during October and November, 1931, respectively. The revelation shattered the market for the second time. The rate again dropped to \$34.

The year 1932 opened with the yen stabilized at the new level, only to be jostled again following the outbreak of the Shanghai situation on the night of January 28.

When the League of Nations Assembly of March 4 loomed large on the horizon of world diplomacy and trained observers predicted that Japan might find herself helplessly isolated, the yen began to dwindle again. Indications were that it would be unable to support the \$30 level. This tendency was further helped by the frequent bank failures in Nagoya, an important industrial center located between Tokyo and Osaka.

But Japan was fortunate in that the American dollar showed signs of depreciation, reflecting the financial uncertainty within the United States. Moreover, the thoroughgoing evacuation of the Japanese troops from Shanghai produced a favorable effect on the exchange market. The yen exchange rate even improved to \$33 as a result.

All seemed to be going on smoothly. None could see the dynamic force that was reaching the breaking point in those days under the tranquil surface. And, when it exploded the nation learned that their Premier had been assassinated in his official residence.

The formation of the succeeding Ministry took time. Dr. Kisaburo Suzuki, former Home Minister, succeeded the late Mr. Inukai and became the President of the Seiyukai with its overwhelming majority of seats in the House of Representatives still intact. He expected to form the next Ministry. But the acute state of affairs evidenced in those days required some one other than a party politician to head the new Government. Reflecting such political uncertainty, the yen exchange rate again began to fall.

When Admiral Viscount Makoto Saito organized the national Government with the support of the Seiyukai and the Minseito, Mr. Korekiyo Takahashi remained in the office of the Finance Minister at the special request of the new Premier. This gave assurance to Japan's financial circles.

It became known, however, that the actual state of affairs in Japan's farming villages was more distressing than had generally been believed. There had appeared a pressing need to relieve the agrarian population. Finance Minister Takahashi found it best to resort to the inflation policy to cope with the situation. As a result, the Bank of Japan reduced its official rediscount rate in June and the Exchequer bills were redeemed in cash. This eased the money market considerably, but simultaneously it gave rise to the vague anxiety that Japan might begin to suffer from uncontrollable inflation. And inflation is always an unfavorable factor in the exchange market as it is still fresh in everyone's memory what took place in Germany during the worst of its inflation period.

To make the situation worse, the 62nd session of the Diet convened in June passed the capital escape prevention law which signifies a partial control of the exchange market. The promulgation of this law placed the importers in an embarrassing position as they found it extremely difficult to obtain funds in foreign currency to cover their transactions. It gave rise to a sudden demand for the dollar and the pound sterling in the exchange market, resulting in a shortage of supply in reverse ratio. The yen at last went below the \$30 mark to about \$26 on New York toward the close of June.

The rate recovered to some extent during July, but again collapsed in August, going even below \$22 with indications that a fall below \$20 might prove only a question of time.

It is recalled that a group of politicians and business men insisted on the suspension of the gold standard last year, declaring that Japan's manufacturing industries would revive only if the yen exchange rate declined to about \$25 per Y.100. Even these people, however, did not dream that the rate would fall below \$25 and threaten to go even lower than \$20. What then smashed the yen exchange market?

Admitting that the prospects of the Manchurian issue, viewed pessimistically abroad, especially, in the face of the fast approaching convocation of the League of Nations Assembly, have played an important role to bring forth the heavy depreciation of Japanese money in the international exchange market, there have also been a number of domestic factors that are now held responsible for the phenomenal collapse which surprised even the original advocates of the suspension of the gold standard. These factors may be summarized in four items as follows:

1.—FEAR OF INFLATION:

It seems inevitable that the currency circulation in Japan would show overwhelming increases, following the materialization of the national crisis relief measures.

Finance Minister Takahashi, at the 63rd session of the Diet on August 25, 1932, explained that a total of Y.263,000,000 was necessary for the current fiscal year (ending March, 1933) to finance various relief programs. It was further explained that the total was made up of Y.176,000,000 to be borne by the Government and Y.87,000,000 to be shouldered by the prefectural governments.

The national crisis relief projects, however, spread over three years. And, the Finance Minister announced that all told approximately Y.1,600,000,000 was to be disbursed in these three years ending with the fiscal year of 1934-5 in order to deal with the prevailing crisis. Such prospects naturally awakened fears that a considerable inflation in Japan is now inevitable.

2.—POLITICAL UNCERTAINTY:

The national Government under Premier Saito is supported officially by the Seiyukai and the Minseito. The Minseito, however, has had internal trouble resulting in a split, followed by the birth of the Kokumin Domei under the leadership of Mr. Kenzo Adachi, former Home Minister. Meanwhile the Seiyukai has shown signs of not supporting the Government fully. It is feared that the Seiyukai may wreck the Government in the hope of organizing a Ministry of its own.

3.—ACTIVE MOVEMENT OF RADICALS:

Rumors have been rampant that radicals, both "reds" and reactionaries, were conducting an active subterranean campaign to launch some kind of a plot taking advantage of the 63rd session of the Diet which was specially convened on August 22.

4.—LOW INTEREST POLICY:

The Government policy to induce a general reduction of interest rates definitely took effect in August, 1932. It was announced on August 16, though not officially, that the postal savings deposit rate would be cut down from 4.2 per cent to 3 per cent per annum, beginning on October 1, this year. The Bank of Japan rediscount rate was then reduced on August 18, for the third time in succession this year, to 4.38 per cent per annum, the lowest point in the history of the Bank's rediscount rates since its establishment in 1882. The materialization of this low interest rate policy,

side by side with the proposed enormous relief expenditures, has further intensified the fear of inflation.

It is true that these factors do not materially affect the exchange market. But they produce strong psychological effects on the operators. And, as was evidenced in France some years ago, such psychological effects alone can wreck the exchange rate. The Japanese yen is not an exception. In the meantime, what has been taking place in the exchange market has been far from heartening.

The raw cotton and wool importers began to cover their import bills at the beginning of August, one month earlier than in normal years. The electric power companies, on the other hand, were in need of more foreign money to pay the interest of their debentures issued abroad. This activity of the electric companies in the exchange market has always been an unfavourable factor, but its adverse effects were particularly marked at this time. For one thing, the market had become narrower in Japan because of the capital escape prevention law that had taken effect in July, this year. The active demand for foreign money naturally forced down the exchange rate. At this very juncture, the Shanghai exchange operators came forward with their vicious speculation, encouraged by animated selling orders that they received from Dairen.

It was but a natural outcome of all such accumulated bad factors that the yen exchange rate should collapse and stay flat. It is especially so as the Japanese importers in general, frightened by the distressing developments, unanimously made haste to settle their import bills, this in turn causing the exchange banks to cover their needs. Here arises the question: How much more will the Japanese yen depreciate?

This is a difficult question to answer. Even experienced bankers cannot reply with confidence, let alone with authority. They know, however, that the rates will be still lower than at present in October of this year, for transactions for October delivery are now conducted at a considerably lower level.

They have ideas and opinions, however, as to the question: What are the prospects of Japan's exchange market? And, they will invariably tell you that that the present exchange rates do not represent the actual state of affairs in connection with Japan's foreign trade.

The foreign trade is always an important factor to decide the money exchange rate of a country. In the particular case of the Japanese yen, however, the trade balance appears to be normal. And yet, the exchange rate has collapsed.

The Finance Office returns show that Japan's foreign trade from January 1, 1932, until August 20, 1932, resulted in an excess of imports amounting to Y.190,000,000. Compared with the corresponding period of 1931, this represented an increase of Y.104,000,000. Japan's foreign trade, however, always develops in such a manner that the import heavily exceeds the export during the first half of the year, and the export becomes larger than the import during the second half of the year.

In point of fact, the export season, so to speak, set in at the end of June, this year, showing remarkable results. During the past 60 days, since June 21 until August 20, the export exceeded the imports by Y.90,000,000. Indications are that the present excess of imports standing at Y.190,000,000 will be reduced to about Y.100,000,000 or even less, as the prevailing low exchange rates are stimulating active exports, and simultaneously, discouraging imports. In 1931, Japan's commodities trade resulted in an excess of imports amounting to Y.89,000,000.

In view of the fact that Japan is primarily an importing country in the commodity trade, the present prospect of imports aggregating more than the exports by Y.100,000,000 is nothing extraordinary. It is on the basis of this interpretation of the situation that the present yen exchange rate does not reflect the actual state of affairs of Japan's foreign trade. Hence the contention that the prevailing level is too low.

This gives rise to another argument. It is that so long as the trade situation has hardly anything to do with the present dismal aspect of the exchange market, its improvement, too, depends on something else. And, this "something" means Japan's political circumstances and also Japan's position in international diplomatic relationships.

As regards the domestic situation, considerable agitation goes on in political circles at present, especially as there are many

(Continued on page 439)

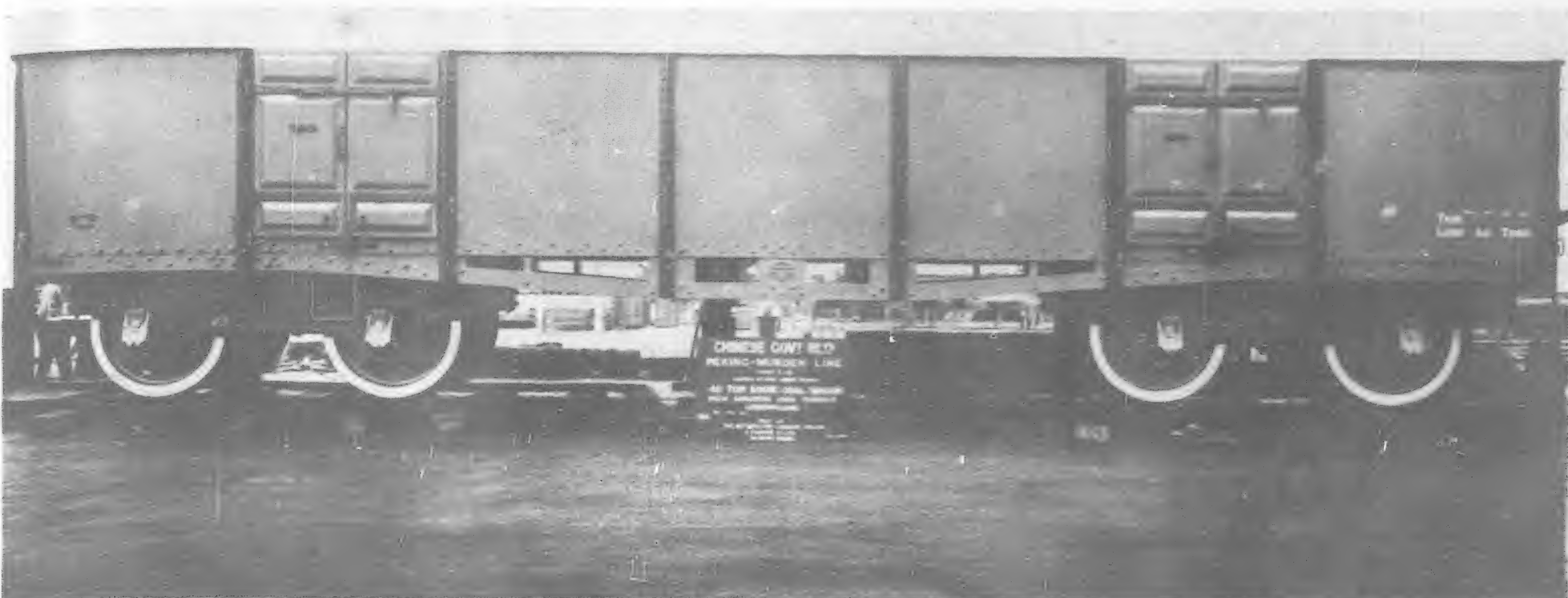


Fig. 1.—40 ton Sandberg High-Tensile Steel Coal Wagon, Bogie Type, built for the Peiping-Liaoning Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.

The Metropolitan-Cammell Carriage, Wagon & Finance Company, Limited

Illustrating Many Types of Rolling Stock Supplied by this Company to Railways in China through a Period of 40 Years

(The following article is supplementary to a preceding article devoted to activities in China of the Metropolitan-Cammell Carriage, Wagon & Finance Company, Ltd., which appeared in the June issue of The Far Eastern Review.)

THE Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd. has built rolling stock, bridgework and equipment for the Chinese railways through the whole period of railway development in China and has at the present moment just completed 70 all-steel bogie covered goods wagons of 40,000 kilos capacity and six spans of bridgework for the Chinese National Railways. Accompanying this article are illustrations of some of the rolling stock supplied by the Company to the Chinese Railways.

Wagons—Peiping-Liaoning Railway

The first rolling stock supplied to this railway formed the first main line stock imported into China and consisted of small four-wheeled wagons, which were put into service when the first section of the railway was completed. Since then the Metropolitan-Cammell Company has supplied a very large quantity of rolling stock to this railway and in Fig. 1 is illustrated the latest type of 40 ton bogie

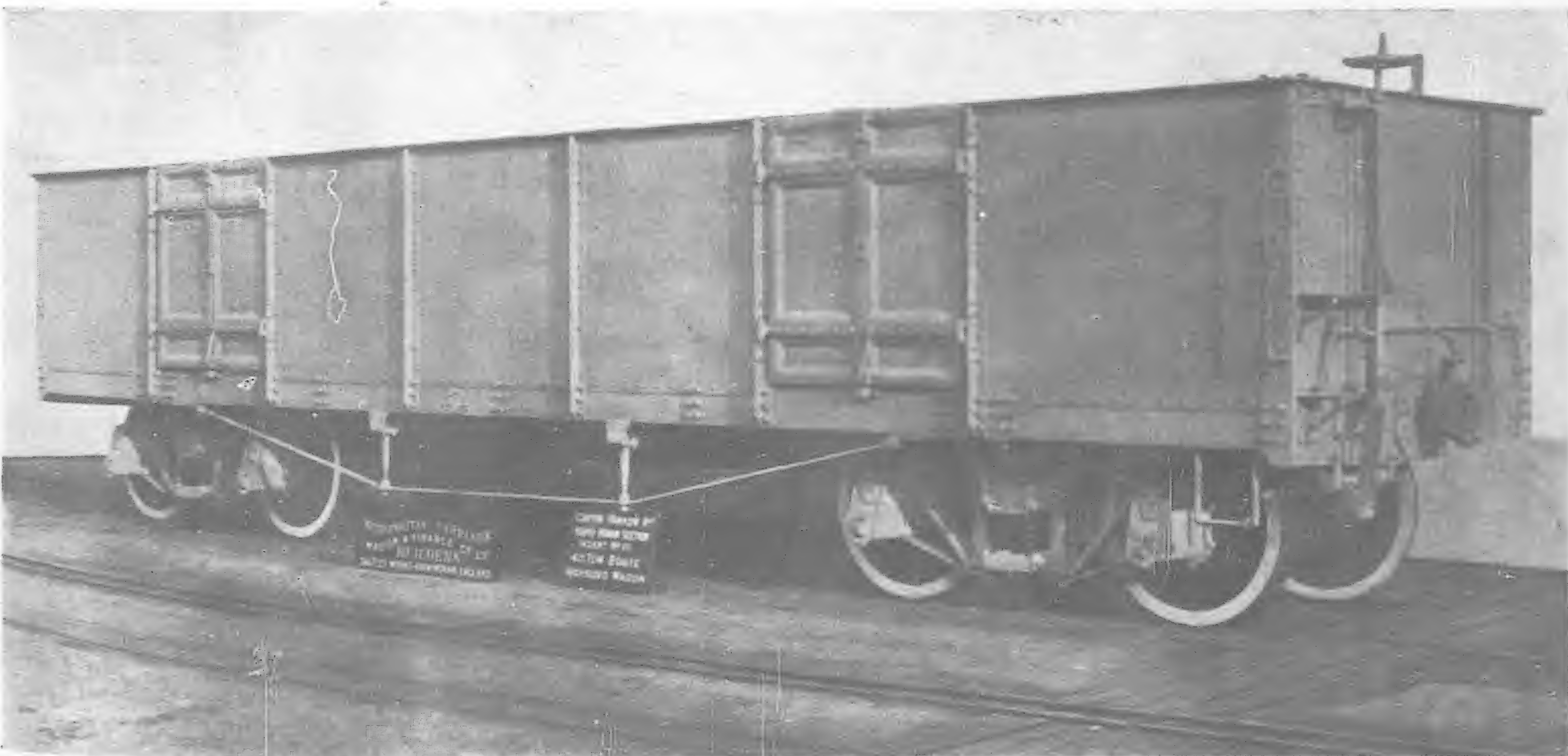


Fig. 3.—40 ton All-Steel High-Side Bogie Wagon built for the Canton-Hankow Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.

type high-side all-steel wagon built for this line. The underframe of the wagon is constructed of Sandberg High-Tensile Steel which combines great strength with lightness.

The tare weight of this 40 ton wagon (forty long tons) is only 17 tons.

In Fig. 2 is illustrated one of the bogies of this wagon. The bogie frames consist of pressed steel plates and the wheels are of the rolled steel disc type manufactured by Taylor Brothers & Co., one of the Associated Companies.

The Company has also supplied many wagons of the covered and other types to this railway.

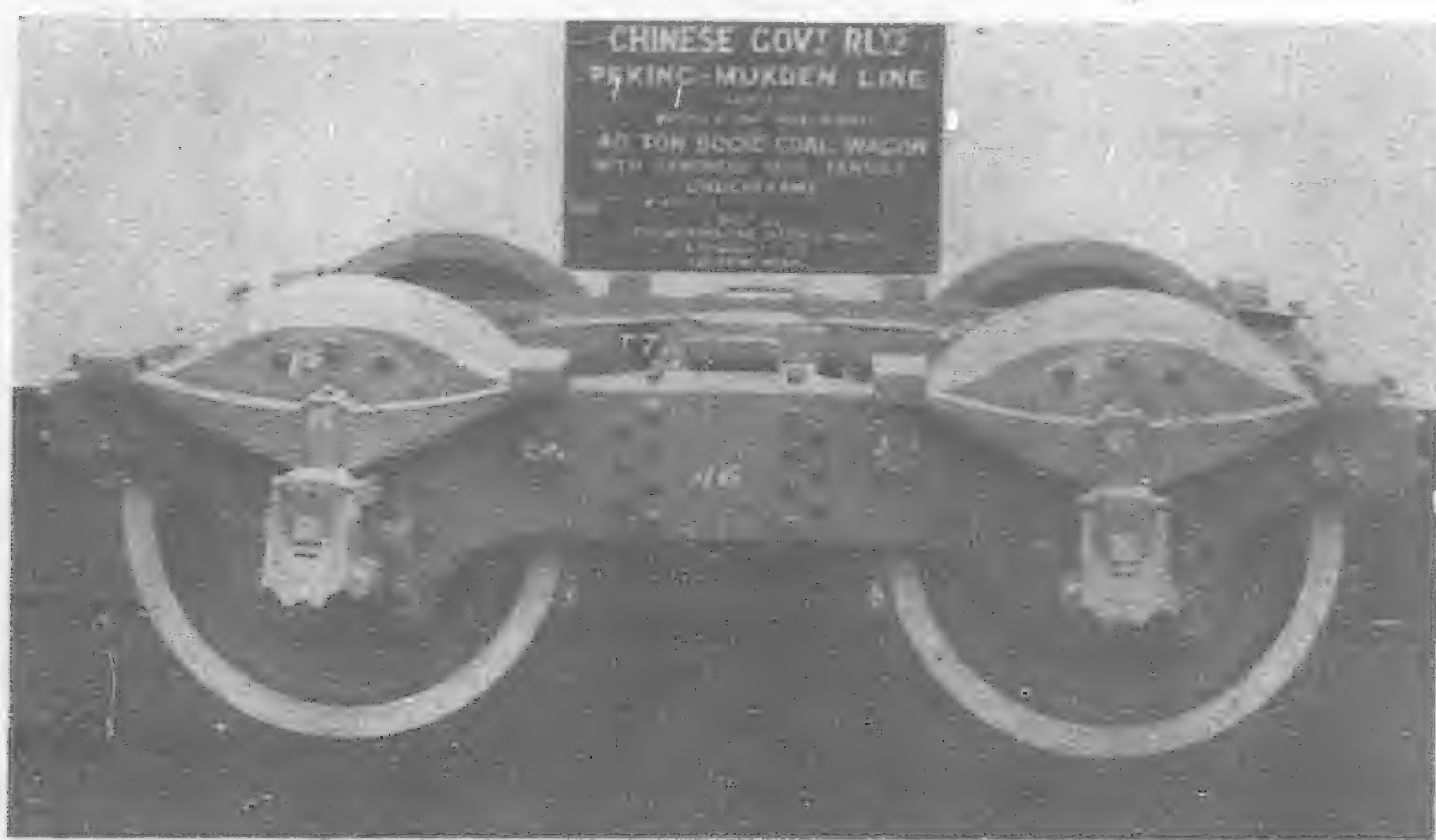


Fig. 2.—All-Steel Bogie Truck for 40 ton Steel Wagon (See Fig. 1) built for the Peiping-Liaoning Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.

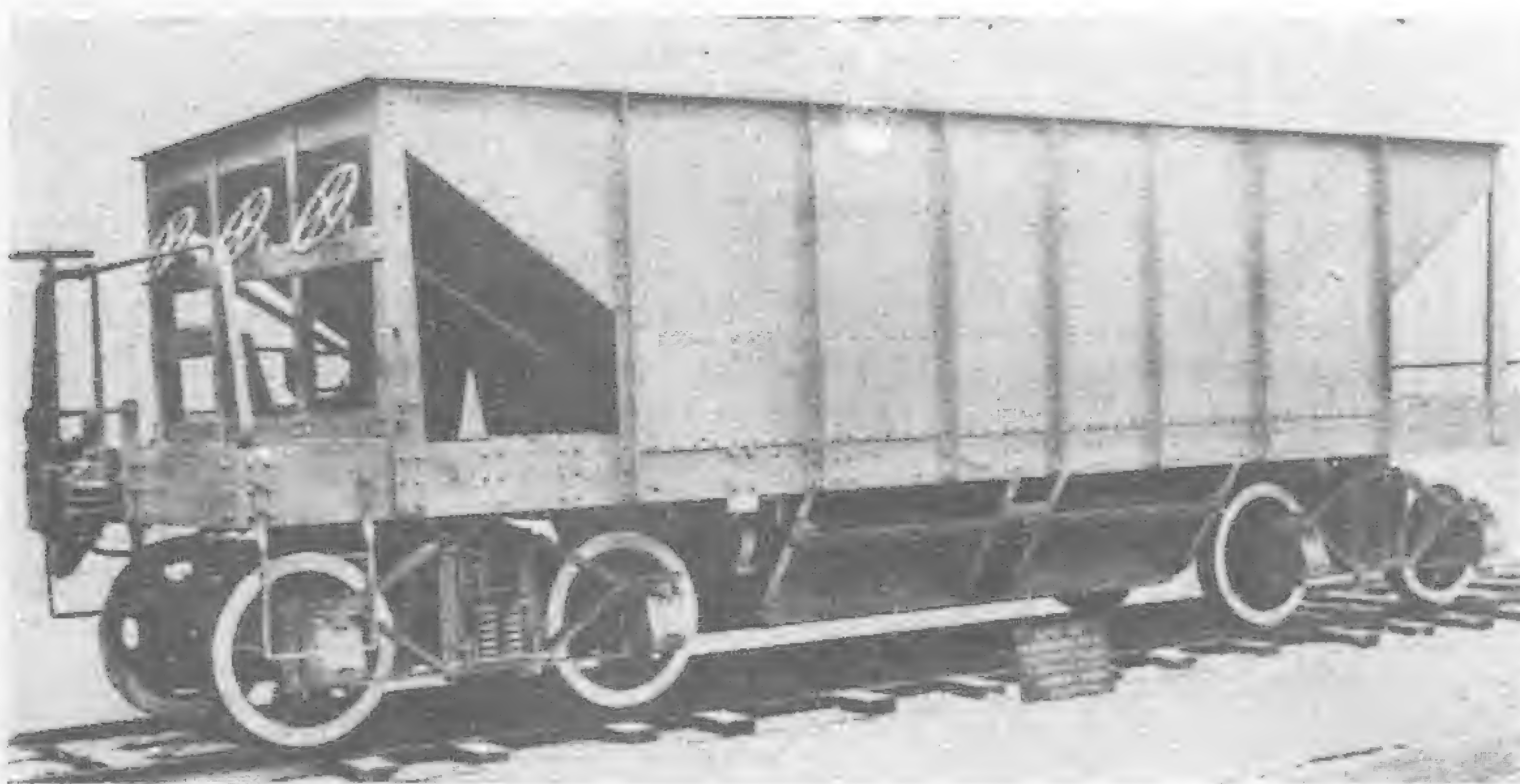


Fig. 4.—All-Steel Bogie Hopper Wagon built for the Nanking-Shanghai Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.



Fig. 6.—30 ton All-Steel Covered Wagon, Bogie Type, built for the Nanking-Shanghai Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.

Canton-Hankow Railway

In Figure 3 is illustrated the type of 40 ton all-steel high-side wagons built for the Canton-Hankow Railway, Hupeh-Hunan Section. Nearly 100 of these wagons were built by the Company. Particular points of interest in these wagons are the fish-belly types of steel underframe, vertical adjustment to the truss-rod struts, door opening and closing gear which can be operated from track level when wagon is standing in a siding, journal box dust shields which can be replaced or relined without lifting the wagon, and all parts interchangeable.

Nanking-Shanghai Railway

In Fig. 4 is illustrated a large all-steel hopper wagon built for ballasting work on the Nanking-Shanghai Railway, all hopper door regulating gear being concentrated at one end of the wagon for convenience.

Figure 5 represents some all-steel low-side wagons of 35 tons capacity built by the Company for this railway. The tare weight of these wagons is 14½ tons. These particular wagons were supplied with "cast" wheels which were made at the Barrow-in-Furness Works in England.

Figure 6 shows one of many 30 ton all-steel bogie covered wagons built by the Company for the Nanking-Shanghai Railway. The tare weight being 16 tons, 18½ cwt.

In Fig. 7 is illustrated a type of 20 ton all-steel covered wagon mounted on four wheels, many of which have been built for this railway by the Company. The tare weight of this covered wagon is 9 tons, 13 cwt.

In Fig. 8 is shown a Nanking-Shanghai Railway all-steel bogie brake van of high capacity. The tare weight is 19 tons, 11 cwt. These brake vans are very stoutly constructed for heavy service on goods trains.

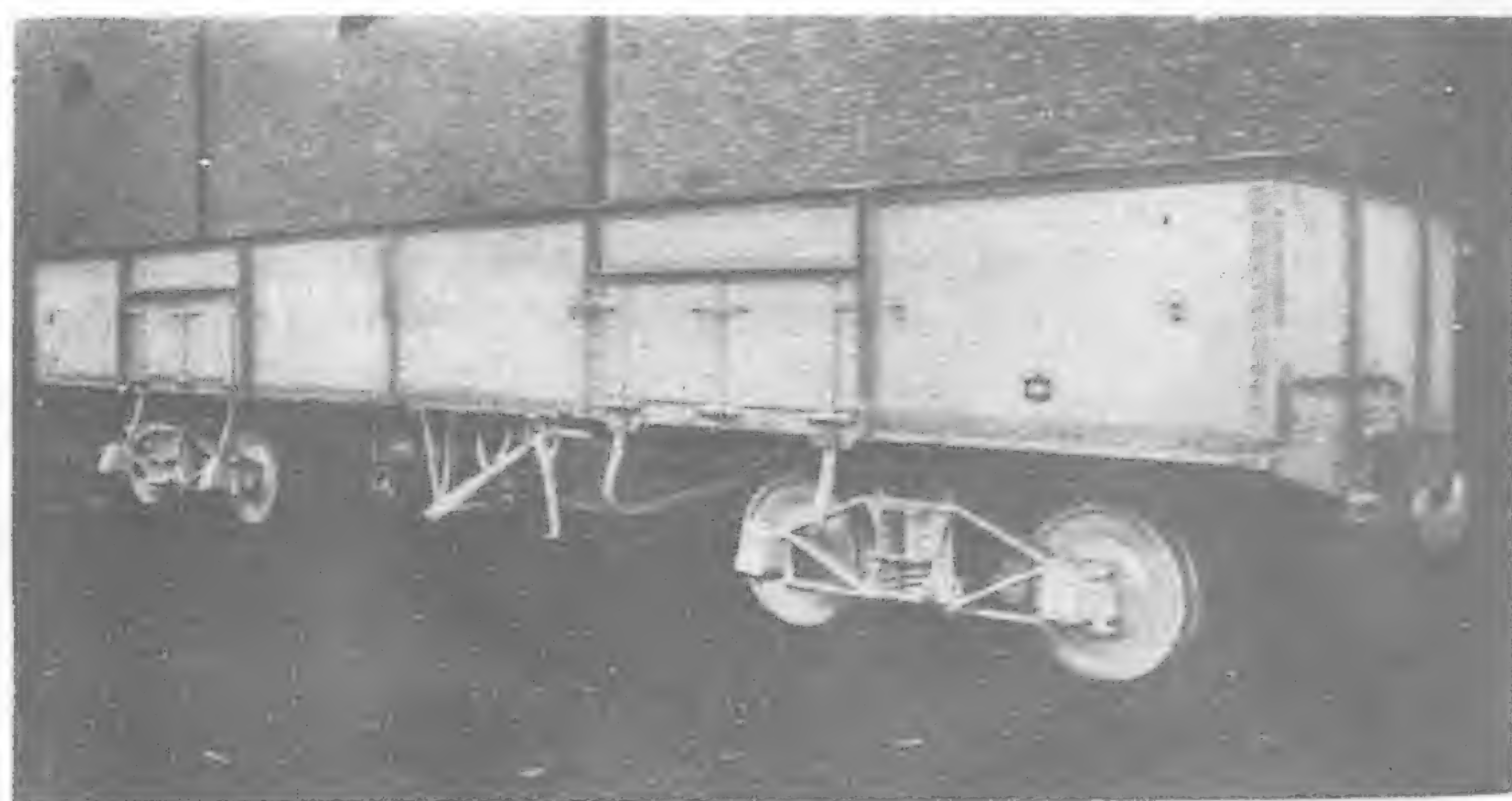


Fig. 5.—35 ton All-Steel Low-side Bogie Wagon built for the Nanking-Shanghai Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co.



Fig. 7.—21 ton All-Steel Covered Four-Wheeled Wagon built for the Nanking-Shanghai Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co.

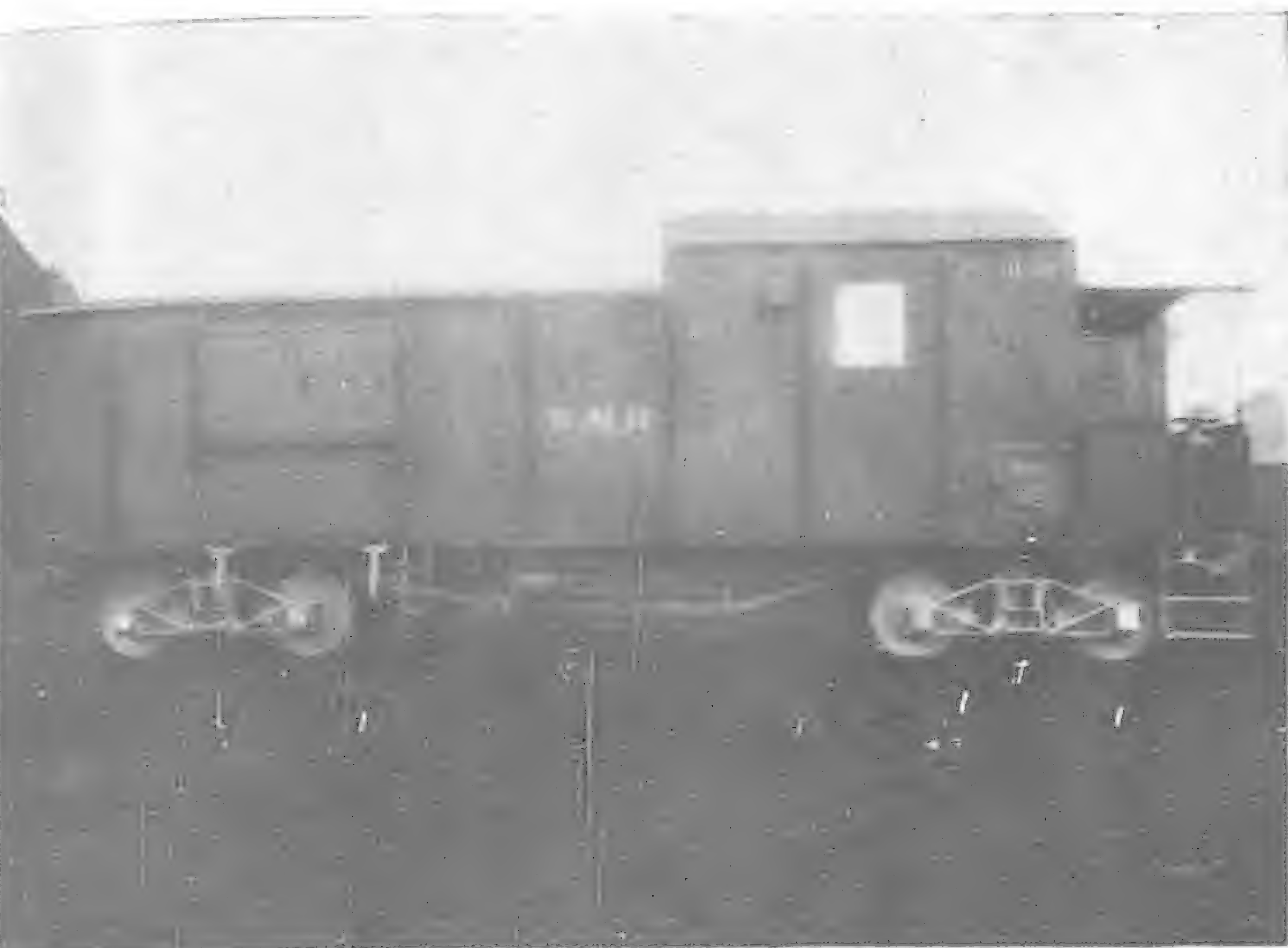


Fig. 8.—All-Steel Bogie Type Brake Van built for the Nanking-Shanghai Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.

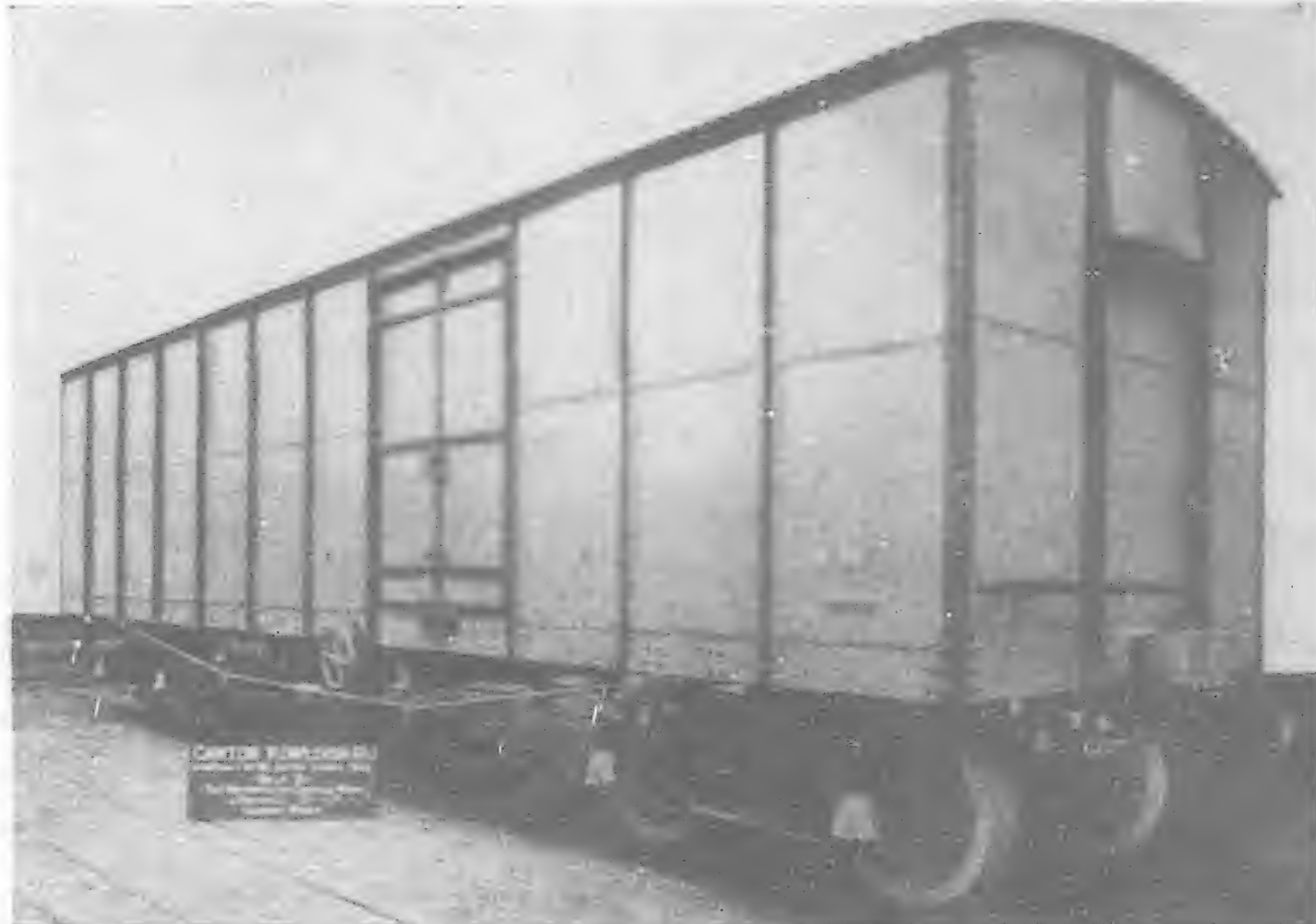


Fig. 9.—All-Steel Bogie Type Covered Wagon built for the Canton-Kowloon Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.

Canton-Kowloon Railway

Illustrated in Fig. 9 is the latest type of all-steel bogie type covered goods wagon built by the Company for this railway. Much of the rolling stock on this railway, as also practically the whole of the rolling stock on the Kowloon-Canton line, has been built by the Metropolitan-Cammell Carriage, Wagon & Finance Co.

Shanghai-Hangchow-Ningpo Railway

Fig. 10 represents the latest type of 40 ton all-steel bogie type covered wagon built by the Metropolitan-Cammell Co. for the above railway.

Canton-Hankow-Szechuen Railway

The Company has also built wagons for many of the other railways in China. In Fig. 11 is shown one of a large number of four-wheeled all-steel ballast wagons built for the I-Kuei Section of the Canton-Hankow-Szechuen Railway.

Anhui Railway

A type of 30 ton all-steel bogie type covered goods wagon built for this railway is illustrated in Fig. 12. The tare weight of the 30 ton covered wagon is 12 tons, 18 cwt.



Fig. 10.—40 ton All-Steel Bogie Type Covered Wagon built for the Shanghai-Hangchow-Ningpo Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.

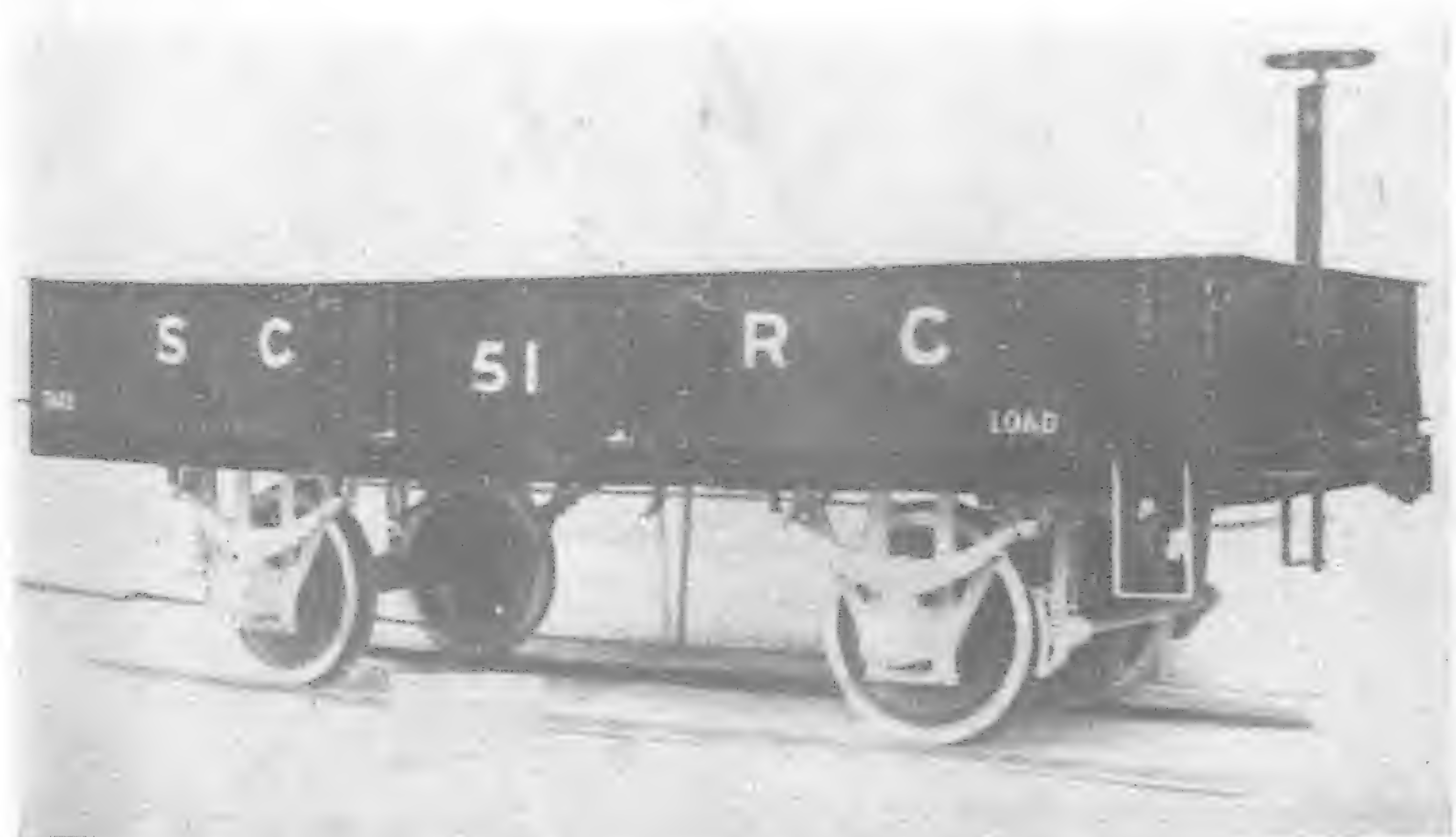


Fig. 11.—Four-wheeled All-Steel Ballast Wagon built for the Canton-Hankow-Szechuen Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.



Fig. 12.—30 ton All-Steel Bogie Type Covered Wagon built for the Anhui Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.

Coaches

Besides wagon construction the Company has built a very large number of coaches, coach underframes, etc., for the Chinese National Railways. In Figure 13 is illustrated the interior of a coach body built by the Company for the Nanking-Shanghai Railway. This illustrates the high-class workmanship employed by the Company and represents the interior of a first class coach. These coaches have a tare weight of 40 tons, 8½ cwt.

In Figure 14 is shown one of a number of coach underframes built for the Tientsin-Pukow Railway for 60 feet coaches. The tare weight of these underframes and bogies is 17 tons, 8 cwt.

Figure 15 shows a type of Standard underframe built for the Shanghai-Hangchow-Ningpo Railway. All of the coach underframes on this railway have been built by the Metropolitan-Cammell Company. These coach underframes as also those supplied to the Nanking-Shanghai Railway are noted for their very smooth and easy riding and in Fig. 15 is illustrated one of these coach bogies which shows the method of "springing" employed.

The foregoing illustrations will serve to show the many types of rolling stock built for the various lines comprising the Chinese National Railways by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd. The privilege of building stock for these railways has extended over 40 years.



Fig. 14.—Steel Coach Underframe and Bogie Trucks built for the Tientsin-Pukow Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.



Fig. 13.—Interior First Class Compartment of Coach-Body, Nanking-Shanghai Railway, built by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.

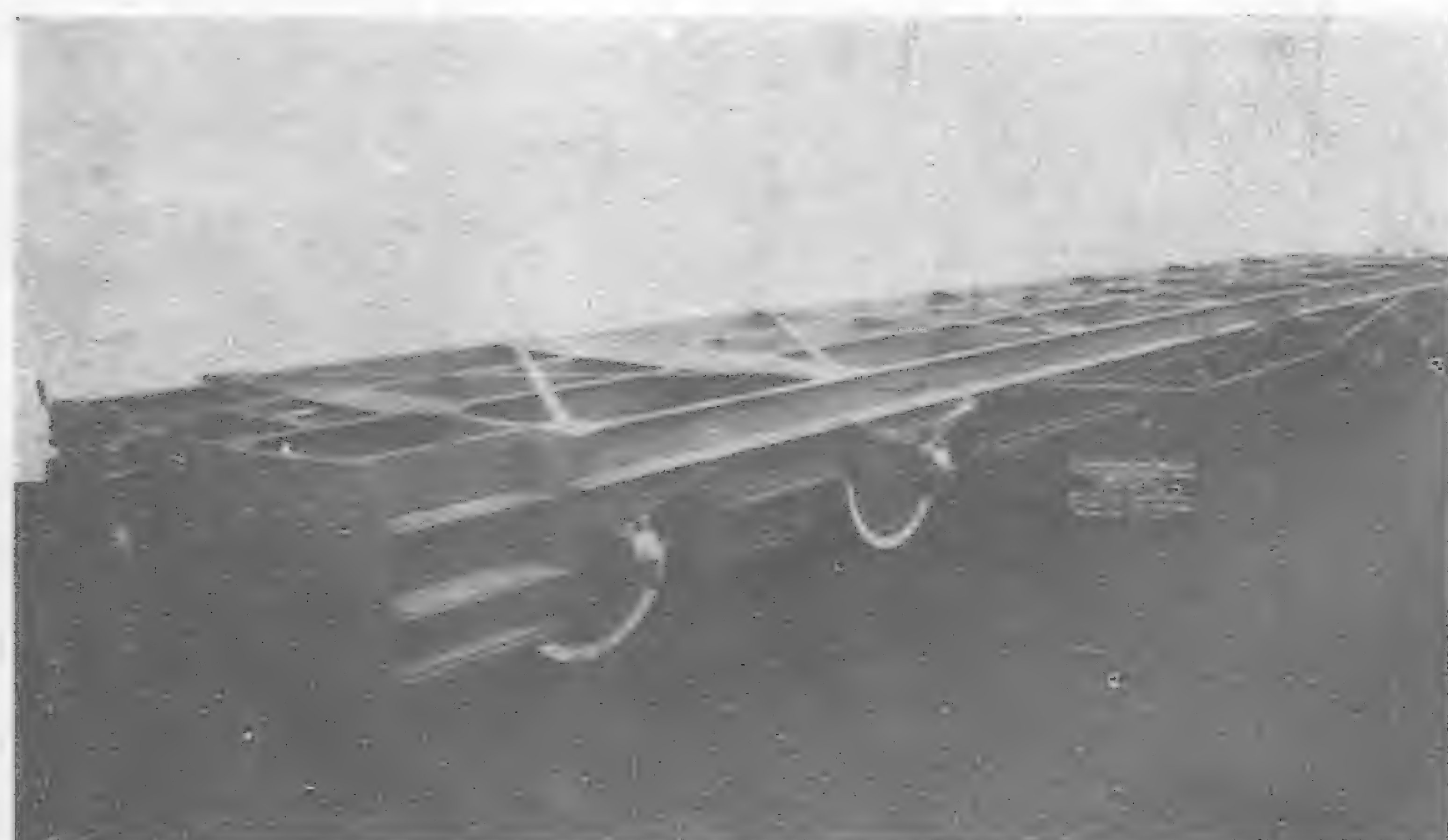


Fig. 15.—Steel Coach Underframe and Bogie Trucks built for the Shanghai-Hangchow-Ningpo Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.



Fig. 16.—Coach Bogie Truck showing Spring-Gear built for the Shanghai-Hangchow-Ningpo Railway by the Metropolitan-Cammell Carriage, Wagon & Finance Co., Ltd.

Soviet is Operating The World's Largest Hydro-Electric Plant

On August 25 the dedication ceremonies celebrating the beginning of operation of the Dnieper hydro-electric power plant, the largest in the world, were conducted. This event marks an outstanding victory in the economic development of the Soviet Union. As regards the scope and magnitude of the project, the obstacles to be overcome, and the speed of its accomplishment, the completion of the Dnieper River dam and power plant constitutes one of the greatest achievements of modern engineering. Both the dam, the last batch of concrete in which was placed on March 28 of this year, and the power plant, which gave its first commercial power on May 1, were completed about six months ahead of schedule. The cost of construction of the power plant and dam was \$110 million, and together with the complex of industrial enterprises now rising around it and the construction of the socialist city, the project will involve a total cost of 820 million roubles (about \$420 million). At times as many as 50,000 workers were employed on the project, the preliminary work of which was begun in March, 1927.

On July 9 the high-tension transmission line from Kichkas, the site of the Dnieper River power station, located about 200 miles up the river from the Black Sea, to the Dnepropetrovsk metallurgical plant 62 miles away, carried its first current. On July 10 the fourth of the nine 84,000 horse-power turbo-generator units to be eventually installed in the station, began operations. On the same day a number of plants in the Dnieper industrial combine began using the Dnieper power. This is considered probably the cheapest now generated anywhere in the world. By August 25 the plant was expected to start operations with a capacity of over 300,000 kilowatts, and the ultimate capacity of 756,000 h.p. is scheduled to be attained in 1933.



The Dam of the Dnieper River Hydro-Electric Station

The completion of the Dnieper hydro-electric project (Dneprostroy) has vast social and economic significance for the U.S.S.R. inasmuch as it will mark an important step in the growth of one of the principal industrial areas of the country. It will provide the power for general industrial and domestic use to a territory of

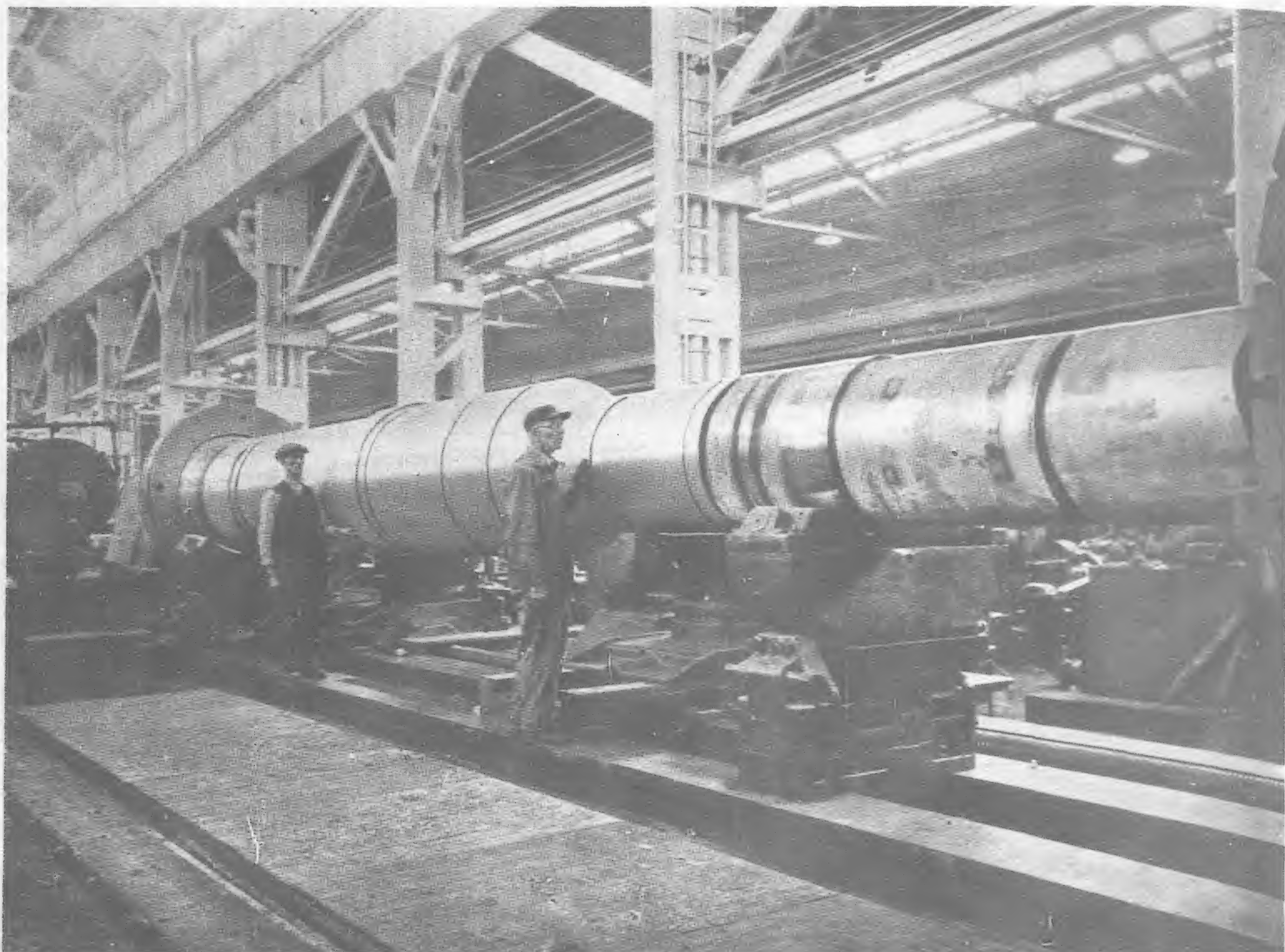
70,000 square miles, greater than that of all of the New England States, and for a population of about 16 million persons. It will furnish the sinews for the great steel, chemical, ferro-alloys, aluminum, cement, fertilizer and machinery works now being constructed near the power plant. The water from the reservoir that has been created will irrigate and make fertile hundreds of thousands of acres of the surrounding steppe. Finally, by raising the level of the river and thus submerging the great rapids which formerly broke up the Dnieper River into two sections, it will make possible navigation throughout virtually its entire length of 1,300 miles, thus removing an age-old obstacle to the maximum development of the basin.

The Largest Concrete Dam Ever Built

Dneprostroy has been described by Col. Hugh L. Cooper, the prominent American hydro-electric authority who has been chief consulting engineer on the project virtually since its inception, as "one of the most difficult, if not the most difficult, engineering works of its kind that the world has ever attempted to build." The dam contains 704,000 cubic meters (968,000 cubic yards) of concrete and is the largest



Rotor Spider of one of the Dnieper Power Plant Generators constructed by the General Electric Company at Schenectady, the Largest Generators Ever Built



Shaft of one of the Generators of the Dnieper Hydro-Electric Power Plant Produced at the Schenectady Plant of the General Electric Company

masonry dam ever built. Its length is 2,500-ft. and its height 170-ft., raising the level of the water of the river by over 120-ft. Excavation for the dam was begun in March 1927 and actual erection started in 1929. In a test of the dam made in May 1931, when the permanent structure was only partially completed, the coffer-dams successfully withstood a flood discharge of 835,000 cubic feet per second, the greatest amount of water ever encountered by a structure of this type in the annals of engineering. Despite the tremendous obstacles that had to be overcome—the natural difficulties of the project and the fact that the great bulk of the working force consisted of unskilled and semi-skilled workers entirely without experience in modern construction methods—the dam was completed months ahead of schedule and world records were broken in its construction. For instance in 1930 a total of 510,000 cubic meters of concrete was placed, a greater volume than was ever accomplished in one year on any project.

Similar feats were performed on the construction of the power plant and the installation of the equipment. A "shock brigade" of young workers engaged in installing the generators assembled the first rotor (weighing 430,000 pounds) in 76 days, the second in 50 and the third in 30 days.

The building of Dneprostroy must be considered a triumph of co-operation between Soviet and American technique, inasmuch as a large part of the equipment for the power plant and of the construction equipment used on the project was imported from the United States, and many American engineers assisted in various key positions. All of the nine hydraulic turbines were built and are being installed by the Newport News Shipbuilding and Dry Dock Company, and five of the generators by the General Electric Company. The remaining four are being built at the "Electrosila" plant in Leningrad. The turbo-generator units are the largest

ever built. Each consists of a water-wheel driven generator, rated at 77,500 kva. and driven by an 84,000 h.p. turbine.

The Dneprostroy power plant has a normal generating capacity of 756,000 h.p. and a maximum of 900,000 h.p. This compares with a capacity of 430,000 h.p. at Niagara Falls and 612,000 h.p. at Muscle Shoals. It will generate more power than all the pre-war Russian power plants combined. The total output of the plant will be about three billion kilowatt-hours per year. Due to the low and high water conditions of the Dnieper River, it will be possible to operate only three of the nine turbines during the entire year and consequently the water power will be supplemented by reserve steam plants with a generating capacity of 200,000 h.p. The remaining power will be seasonal output available in the high-water period.

The Dnieper Industrial Combine

The Dnieper combine constitutes the most ambitious undertaking of its kind in the U.S.S.R., if not in the entire world. There will be eight main enterprises and many auxiliary industries. The combine, which is located about three miles from the station, will cover an area of 14 square miles. It is expected that the entire undertaking will be completed in 1933, within a period of about two years from the starting of construction. The steel mill, "Dneprostal," will produce high-grade steels for the automotive, machinery, and construction industries and will have an output of 1,250,000 tons of iron yearly. The capital investments in this plant alone are estimated at \$133 million. The coke and chemical plant will produce annually 1,400,000 tons of coke and a variety of chemical products. The ferro-alloys plant at Zaporozhye, "Dneprosplav," is scheduled to have an annual output of 80,000 tons of ferro-manganese, 20,000 tons of ferro-silicon, 4,000 tons of

ferro-chrome and 1,600 tons of ferro-tungsten. The manufacture of ferro-manganese will be carried on during the high-water season when the cheap seasonal power will be available.

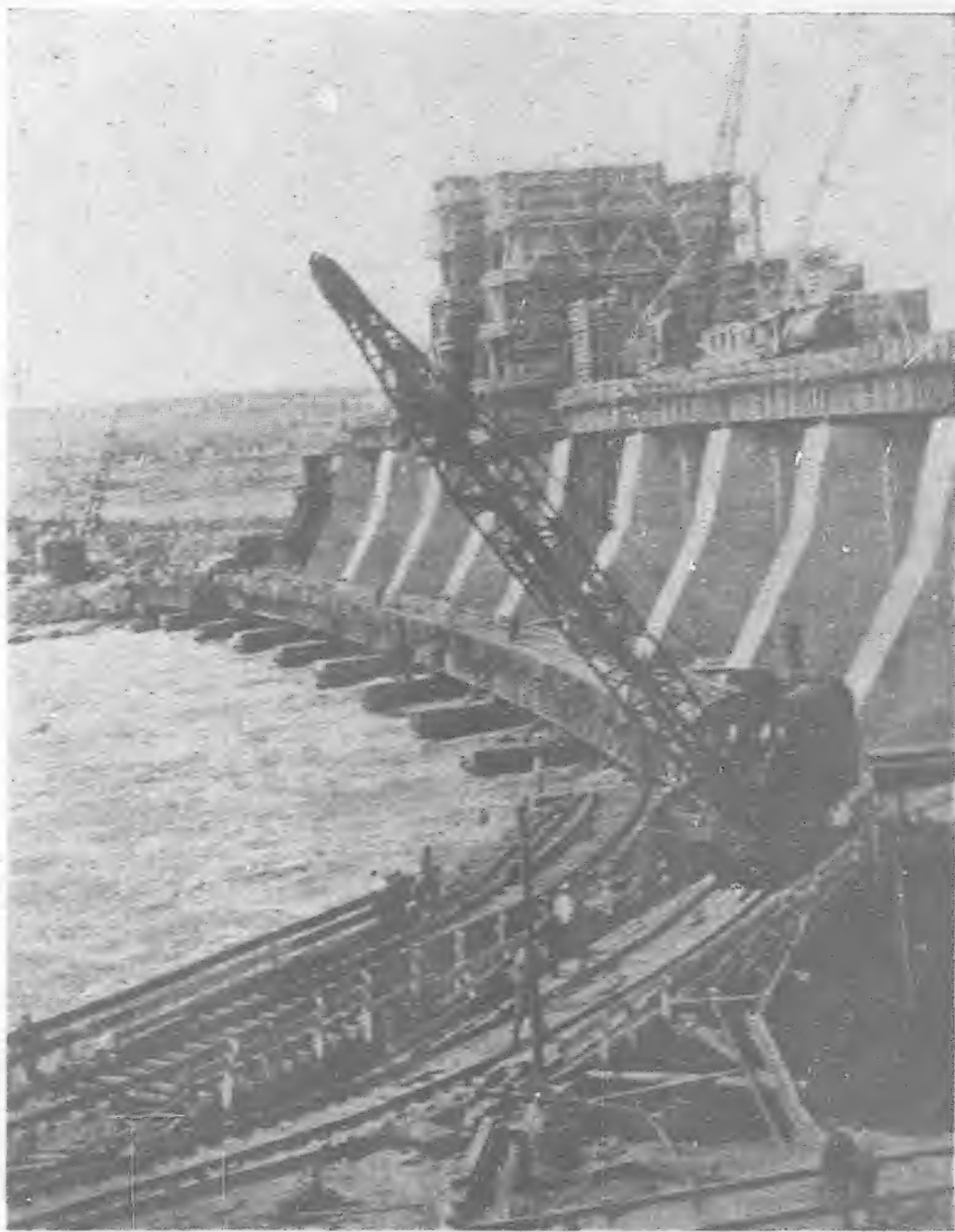
There will also be an aluminum plant with an annual capacity of 20,000 tons. The method used here will be a special process developed by Soviet engineers. Other plants will manufacture slag cement, lime, ordinary bricks, fire and refractory bricks. The building of the various industrial enterprises is being accompanied by the construction of a new socialist city including great blocks of apartments, schools, hospitals, theaters, workers' clubs, public gardens, etc. The old town of Kichkas is now under water and a new city has arisen with 100,000 inhabitants.

Opening of Dnieper River to Navigation

Of no less importance will be the rôle of Dneprostroy in removing the obstacles to navigation on the mighty Dnieper River. Formerly the Dnieper was impassable between Zaporozhye and Dnepropetrovsk, the 100 kilometers of rapids preventing the passage of vessels. The construction of the dam and a sluice five-eighths of a mile in length on the left bank raises the level of the river over 120 feet and makes navigable a waterway linking the Baltic to the Black Sea. Steamers now pass the Dnieper rapids freely, and freight and passenger vessels are now commuting between Dnepropetrovsk and Dneprostroy. Electric engines will pull vessels through a three-flight navigation lock, each with a rise of 41 feet. This lock is expected to handle over two million tons of grain, oil, lumber and products of the Dnieper industrial combine annually.

An idea of the tremendous magnitude of the Dneprostroy project may be gained from a mere enumeration of some of the quantities involved in the work: The basic operations called for 1,500,000 cubic yards of concrete, 2,300,000 cubic yards of rock excavation, 4,400,000 cubic yards of earth excavation, and 4,200,000 cubic yards of dredging. This work was estimated to require 300,000 tons of cement, 900 tons of explosives, and 100,000,000 board feet of timber. The construction carried out, in addition to excavation and coffer-damming, included the following: a temporary power station of 12,000 kw. capacity, compressed air stations, a plant for the manufacture of liquid oxygen, systems of water supply, sewage disposal, and fire protection, rock-crushing and concrete-mixing plants on both sides of the river, a sawmill and wood-working shop, a central machine shop with an area of 7,700 square meters, a railway system with a total length of 62 miles, and many other structures. Also during the preliminary period new living quarters with accommodations for 20,000 people were built to house the workers and their families.

The chief construction engineer on the project was the prominent Soviet engineer, A. V. Winter, who, largely because of the signal success which attended his efforts on the Dneprostroy project, was recently appointed Assistant Commissar for Heavy Industry. The design and supervision of the project were handled mainly by Soviet engineers and foremen, but the Soviet authorities and Soviet



Dam at Left Bank of the Dnieper River Hydro-Electric Power Plant

public opinion in general have been lavish in their praise of the devoted efforts of the American and German engineers employed on the project and particularly of Col. Cooper, the chief consulting engineer. Their accomplishment is specially significant because it provided the first large training school for Soviet workers in modern construction methods.

Soviet Achievements in Electrification

Dneprostroy, while the greatest, is only one of many notable achievements in electrification which the Soviet Union has recorded in recent years. From the time that the first general electrification plan of the country was drawn up in 1920 at the behest of Lenin the power program has been the cornerstone in Soviet economic development. Over a score of large central stations and many smaller stations have been erected in all parts of the country. The capacity of power plants in the Soviet Union has been increased from 1,010,000 kilowatts in 1913 and 1,670,000 kw. in 1927, to 4,060,000 kw. in 1931. The output of Soviet power plants last year, totaling 10.6 billion kilowatt-hours, was more than twice as great as in 1928 and over five times as great as the pre-war output.

In the Second Five-Year Plan power production will receive tremendous impetus, and it is expected that the output by 1937 will be over five times as much as the present total. One of the most important undertakings planned is the great Volgastroy project, which will eventually have a capacity three times as large as Dneprostroy and will irrigate 10 million acres of farm land. Mr. Winter has been placed in charge of the bureau formed to carry out this project, which will be designed by Prof. I. G. Alexandrov, designer of the Dnieper dam. The nucleus of the working forces will be the workers who have gained such valuable experience at Dneprostroy.



Spiral Castings of the Turbines of the Dnieper River Power Station constructed at the Yards of the Newport News Drydock and Shipbuilding Company



Dneprostroy: The New Workers' Town Built near the New Station

When the first Dneprostroy generator began to turn out electric energy, the Soviet Union celebrated the first stage in the operation of what is both the world's largest hydro-electric power plant and the most dramatized unit of the five-year plan. Here in southern Ukraine, but a few hours ride from sunny Crimea and the Black Sea, all has been feverish activity as the final adjustments have been made to the first turbines and generators and to the intake machinery.

Two weeks before the formal opening the writer looked on with a score of Russians and a group of American engineers as the first intake gate was raised. Even the Americans, many of whom have been on this job for two, three and even four or five years, reflected the restrained excitement which the Russians manifested. At first there was difficulty with the clutch. Several mechanics tinkered with the machines for a few minutes, and finally all was ready for a second try. An electrician turned a lever. The heavy steel gate began to move upward slowly. There was no demonstrative enthusiasm, but on the faces of the Russians was something akin to the expression on the face of a child just presented with a toy that "works."

In a sense Dneprostroy is the new Russians' most fascinating plaything. There is, in fact, something almost childlike in the continued repetition in this country of the claim that the Dneprostroy turbines and generators are the biggest ever built, that the power to be generated when all nine of the projected turbines are in operation will be greater than that of any other single hydro-electric plant in the world, and finally that the Dneprostroy is one of the key economic units which when taken together are to permit the Soviet Union "to catch up with and surpass" the United States and other capitalist countries.

Hardly less childlike, it seems, is the effort of the Soviet leaders in press and from public platform to give the impression that here is an out-and-out Soviet achievement. Soviet Russians are seldom reminded that the Hugh L. Cooper Company, of New York, designed the dam and has had its experts on the job in a consultative and supervisory capacity for five years. They are not told that the generators now at Dneprostroy were constructed by the General Electric Company, and that to-day more than a score of American men from this company are engaged in installation work at the plant.

Likewise, they are not told that all nine of the turbines were provided by the Newport News, Va., Shipbuilding and Drydock Company, that nearly all of the steam shovels, steam derricks,

dump cars and well drills used on the project are of American manufacture, and finally that the fact that the dam across the Dnieper River is formed of first class concrete is due in large part to the careful inspection of the Cooper men. Load upon load of concrete was rejected during the construction work as bad.

Propaganda Avoids Facts

What seems childlike in the Soviet attitude toward Dneprostroy becomes understandable when it is taken into consideration that dramatization has proved one of the most effective methods of stimulating the interest of the people in the achievement of the five-year plan. The Soviet Union, so it is stated, is conducting a war to industrialize itself. Just as during the World War propaganda often went astray from the facts, so it is now in the Soviet war for industrialization. The population will work harder if it thinks it is accomplishing things unaided. Therefore, the impression is given that Dneprostroy is entirely a native achievement. Primitive peoples, like children, are interested in the "biggest" things, much less in average sized things. Therefore, the size of the Dneprostroy turbines is glorified.

In more than one very real sense, after all, the achievement at Dneprostroy—such as it is to date—is truly Russian. The will to build is from Moscow. The chief construction engineer, Comrade A. V. Winter, is a Russian, even though of German ancestry. The great bulk of the pay roll of 25,000 is, of course, Soviet Russian. When lives have been lost on the job they have been Russian lives. Recently four men were killed

when a bank they were excavating caved in on them. A few days later a worker was killed when he fell from a scaffolding in the power plant.

Dneprostroy Producing Heroes

The hydro-electric development is perhaps most impressive at night from a point on the dam near the right bank of the Dnieper, overlooking the power house. During construction there were glaring lights on all sides, and there is an almost continuous screech of steam-derrick whistles, for the work went on night and day in three eight-hour shifts. Even were it not for the lights, visibility would have been good, for the Ukrainian nights are cloudless at this time of the year, and just now the moon is nearly full. Below the dam the water rushes madly toward the Black Sea. The appearance



Inside the Spiral Casting of the Hydraulic Turbines for the Dnieper River Plant—Left to Right: A. M. Winter, Chief Soviet Engineer, 2nd; G. D. Zurupa, Vice-President, Amtorg Trading Corporation, 3rd; Col. Hugh L. Cooper, Chief American Consulting Engineer, 5th

of the whirlpools and the continuous roar are reminiscent of Niagara.

The pool above the dam is quiet, like some immense animal asleep after gorging itself. The figure is not entirely fantastic, for more than one village and hundreds of isolated farm buildings were submerged by the waters as they rose more than a hundred feet to a level with the dam. The small town of Kitchkas, where the American engineers lived when they first came to Dnieprostroy, was situated in the valley, hardly more than a half mile above the dam. Only a small building near the now abandoned railway grade survives to prove that the town once existed. To the right, not much farther away, was a gigantic stone lion, erected to commemorate the visit here of a Romanoff. The waters held back by a Soviet dam have served to submerge the czarist lion.

Develops 720,000 Horse-Power

The Dnieprostroy Dam is surpassed in several respects by other like units, but its concrete content is greater than that of any other dam in the world. While the Wilson Dam at Muscle Shoals follows a straight line, this concrete pile across the Dnieper is gracefully curved, largely so that it might take advantage of two islands situated in the river at this point. The Dnieprostroy plant will develop about 720,000 horse-power, as compared to the 620,000 of which Muscle Shoals is capable. While each of the turbines of the new Chippawa plant at Niagara develops 75,000 horse-power, each of those at Dnieprostroy will develop 85,000 horse-power. But the physical dimensions of the Dnieprostroy turbines are three times as great as those of the Chippawa turbines, for the "head" at Dnieprostroy is much smaller than at Niagara.

First Current Generated in April

The original plans called for a total of only 650,000 h.p. and estimated the cost of construction of the station at 150,000,000 roubles. That was in February, 1927. Since then the size of the station was greatly enlarged and the costs have risen even more sharply. At the peak of construction activity, 50,000 workers were employed, 12,000 engaged on the dam itself. They worked day and night.

The idea of a power source on the Dnieper is over a century old. The first modern proposal was made in 1905 by Professors Graftio and Maximov. Professor Graftio lived to see his vision fulfilled, being one of the engineers who worked on the present power station.

In 1928, in line with Lenin's scheme for electrifying Soviet Russia, Professor Alevandrov undertook to work out a practical design. In place of the many dams proposed in earlier schemes, he finally planned a single dam. This was approved finally in 1927.

More than 55 per cent of the 25,000 workers on the hydro-electric plant are under twenty-three years, and nearly 16 per cent of the whole number are women. There are several women engineers on the job. The great bulk of all the workers was brought directly to Dnieprostroy from the village. The task of training these simple people has been difficult, and much of the time of the Russian engineers has been occupied with that work.

The industrial combine on the left bank of the Dnieper is to be the center of the market for the hydro-electric plant's power, but this combine is many months distant from completion.

Model City Being Built

A model city of brick and plaster apartment buildings is being built, but to date it can accommodate only a small fraction of the thousands who have been drawn to the area by the new industrial development. The bulk of the workers and their families have been living in temporary wooden barracks. Though this new city lacks some of the essentials, it boasts most of the accessories of the typical Soviet center of population. Thus, from early morning until late at night, the radio loud-speakers on the roof of the trade union hall proclaim the glories of the workers' and peasants' state.

Eventually the steel mill is scheduled to produce about 1,750,000 tons of finished steel annually. Of this total, 1,000,000 tons will come from the sheet and plate mill, about 675,000 tons from the structural steel department and 50,000 tons more from the tool steel mill. Production of the ferro-alloy plant will be above 100,000 tons, and of the aluminum plant 20,000 tons.

Seldom, perhaps, has an American engineering colony in a foreign land so transferred its mode of life to its seat of operations as has the colony made up of Colonel Cooper's men. Colonel Cooper insisted on a contract which provided for importation, duty free, of all goods needed by his engineers. Upon arriving at the site of the Dnieprostroy they began by constructing, from American designs, a group of half a dozen brick cottages, with fireplaces, central heating, American refrigerators and many other conveniences little known to Russians. A first class tennis court was constructed, and in winter it was flooded and made to serve as a skating rink. For two winters Miss Dorothy E. Fifer, a graduate of Goucher College, conducted a school for the colony under the supervision of the New York State Board of Education. Classes ranged from the first grade to high school. Miss Fifer, who is now Mrs. David L. Dickson, is the daughter of Captain Frank P. Fifer, Colonel Cooper's expert at Dnieprostroy in design and construction.

Large Turbo Sets for Japan

When, in 1927, the Imperial Government Railways of Japan decided to erect their own power station to serve the electrified lines an order for two 20,000 kw. turbo-alternator sets was placed with the British Thomson-Houston Co., Ltd. One of these sets is capable of sustaining an overload of 25,000 kw., a peak load of 30,000 kw., and a momentary overload up to 40,000 kw. The turbine, which is of the two-cylinder type, has 25 stages and is designed for normal steam conditions of 25 kg. per sq. cm. and a total temperature of 375 deg. C. at the stop valve. The normal vacuum is about 722 mm. at 25,000 kw. Stainless steel is used for all blading. The turbine is arranged with three branches for the extraction of steam for boiler feed-water heating purposes. Initially the plant is being operated with two-stage feed heating, giving a final feed temperature of 99 deg. C. at 20,000 kw., the third point being only used in connection with the evaporator. Later on the feed heating plant may be rearranged with a third stage heater to give, in conjunction with the other heaters, a final feed temperature of 150 deg. C. at 20,000 kw.

The alternator is wound for 3-phase, 50-cycles, 6,600-v., 90 per cent power factor, and is equipped with a directly coupled cascade-type exciter. A closed circuit system of ventilation is employed, the circulating water being obtained from the condenser supply. A motor-generator standby exciter set has also been provided. The equipment includes contactor-type starting gear, and the main and exciter field rheostats are arranged for motor operation.

The Hongkong Ferries

On January 1, 1933, a vehicular ferry service will commence running between the new Hongkong pier and Kowloon. Three boats are being built, for the service, at the Hongkong and Whampoa Docks, at an estimated cost of \$1,800,000. They will be operated by the successful tenderers for the service, the Hongkong and Yaumati Ferry Company, Ltd.

The new ferries will have a length of 130 feet and a beam of 41 feet 6 inches. They will be capable of a speed of 10 knots an hour, and will cross the harbour in approximately nine minutes.

The three ferries are to run from Hongkong to piers at Jordan Road, Mongkoktsui and Shamshuipo.

Each ferry will have three decks. The bottom deck will be capable of taking 12 large motor lorries, and will have accommodation for third class passengers. On the middle deck the second class passengers will be accommodated, and first class passengers will have space on the top deck.

All ferries will be fitted with Gardiner Diesel engines of the J-type. Each will have two sets of engines and each set will be capable of developing 400 horse-power. Auxiliary engines will also be fitted.

There will be five berths at the main Hongkong wharf, which will be 450 feet long and 300 feet wide. The piers are being built by the Government and will be ready for service by the end of this year. The gangways will be operated by electric machinery of the type already installed on the new Government ferry wharves at Mongkok and Shamshuipo.



The Metropolitan Theater, Manila, built in Crescent Shape, its Wings enclose attractive Patios

The New Metropolitan Theater in Manila

WITH enterprise and public spirit, the citizens of Manila have provided their city, within the past year, a splendid opera house in which to enjoy the best there is in music and drama and the entertainment of film productions. Led by Mayor Tomas Earnshaw, the popular demand for such an enterprise was crystallized by the incorporation of the Metropolitan Theater Company of which Mr. H. B. Pond was elected president, and in December of last year, the successful fruition of their labor was celebrated by the formal opening of the completed building located in the Mehan Gardens.

The architect, J. M. Arellano of Manila, visited the United States to study its theaters and the New York firm, Thomas W. Lamb, Inc., designers of theaters, acted as consulting architects. The result is a happy combination of modern equipment and unusually fine acoustic qualities with building features that reflect the architecture of the East. Mural paintings by Fernando Amorsolo, noted artist of Manila, are prominent in the decorative scheme.

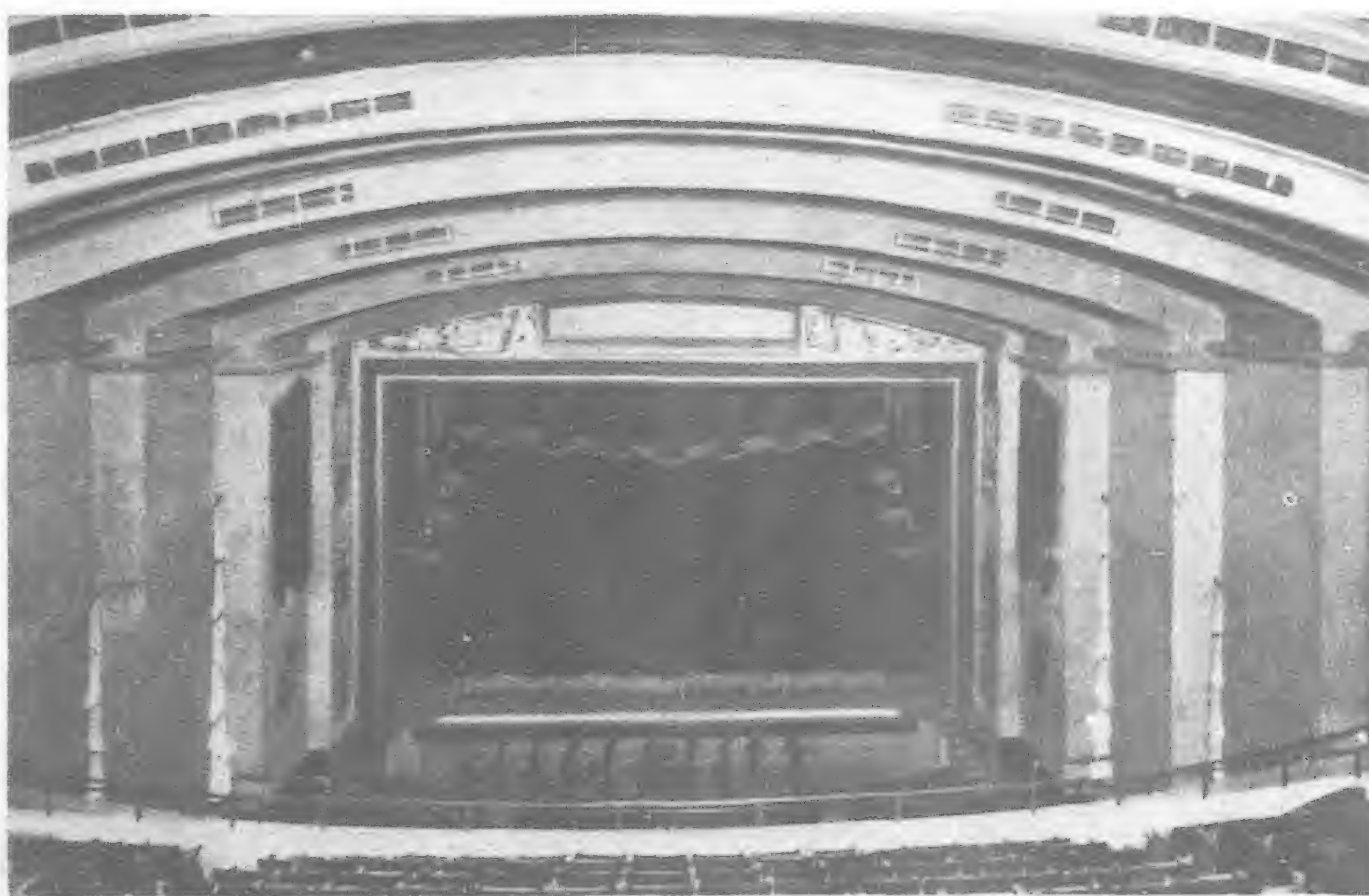
The Metropolitan Theater provides elaborately for the comfort of its patrons. The eye is pleased by decorations

of notable beauty in which the lighting plays an important part, the air is fresh and cool, the lounging rooms are inviting, while pleasant patios give opportunity to enjoy refreshments out of doors. Similarly, the comfort of the actors has been considered in the provision of abundant dressing rooms, fully equipped. A spacious ballroom whose floor is of Philippine hardwoods is another feature meeting a specific community need.

Curtis Lighting, Inc., Chicago, produced a variety of special and unique sources of illumination, following with close fidelity the designs of Mr. Arellano. Supplementing the general lighting

from X-ray reflectors concealed by cornices near the ceiling which bring out the richly colored decorations overhead, there are wall lights of modernistic type, in patterns appropriate for their various locations. Among them is the Bamboo motif, in harmony with an architectural feature of the building suggestive of the Orient.

In Manila the temperature ranges between 78 and 90 deg. F. with a general average of 80 degrees at which the average humidity is 81 per cent. One can be comfortable at a fairly high temperature if the humidity is low, and an air conditioning system



View from the Balcony showing Air Outlets and Lighting Units in the Bamboo Motif

was put into this theater which lowers the humidity to 55 per cent at a temperature of 79-80 degrees. The result is, that coming in from the outdoor atmosphere, one senses an apparent coolness that is delightful. Moreover, even with a large audience the usual effect of which is to raise the temperature and vitiate the air, there is always an ample supply of fresh air, cool and sufficiently dry, flowing into all parts of the theater from overhead while the used air is drawn off from as many places at floor level. The air removed is taken away through ducts to apparatus by which it is literally washed and dried.

In its cycle of circulation, the air from the theater is first cleansed by passing through a spray from water jets. It is then cooled by coming in contact with tubes inside of which cold brine is circulating at a temperature of 50 deg. F. Now when moist air meets a cold object, its moisture comes out as drops of water, leaving the air drier than before, so the passing of air through the cooler lowers its humidity to the predetermined point of 55 per cent and in this condition, having been washed, dried and lowered in temperature, it is pushed along by a fan into ducts that lead it to all parts of the theater, their outlets being disguised by artistic grille work. Air

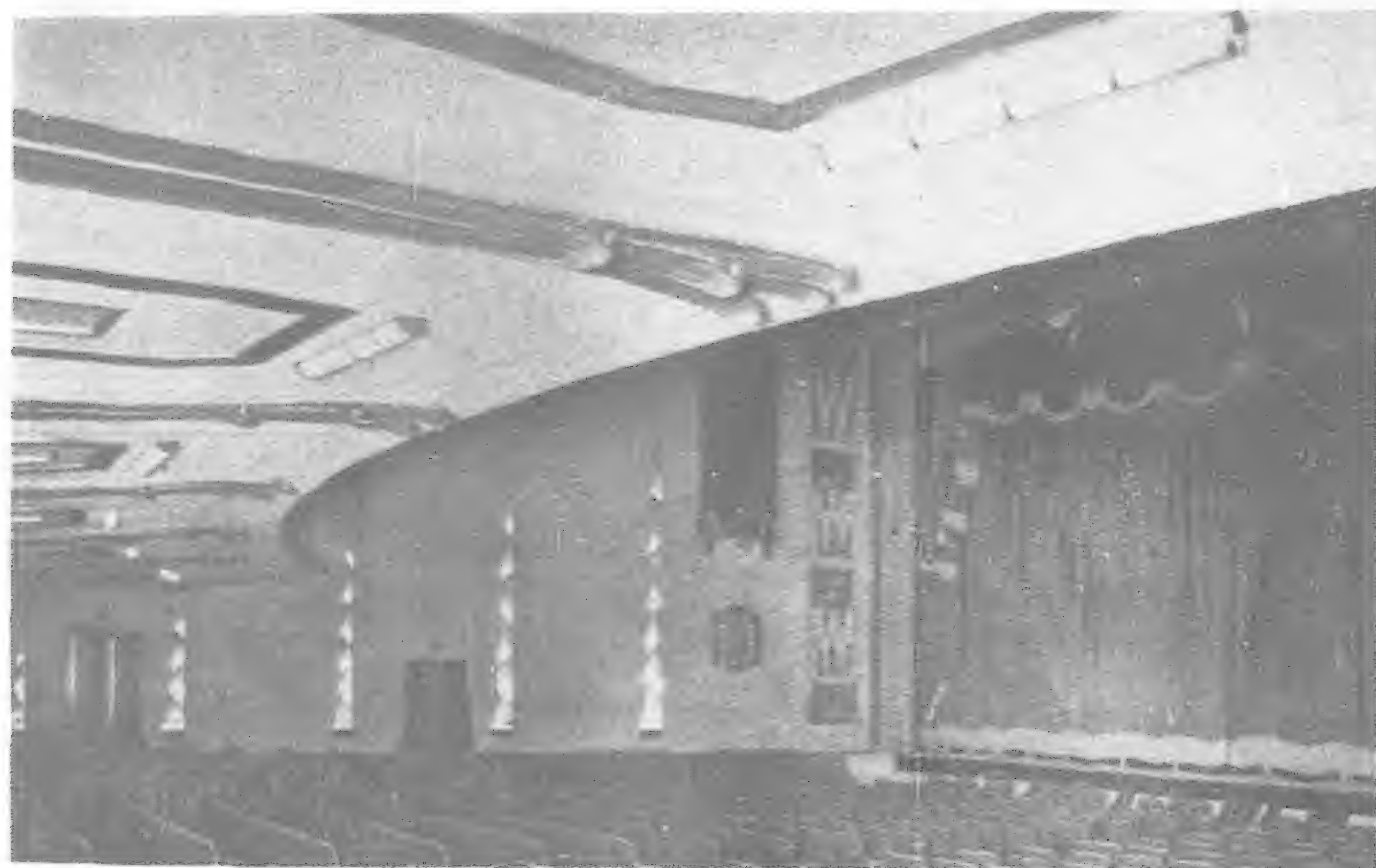


The Foyer showing Vertical Light Units at the Stairway and a Mural Painting by Amorsolo

from outdoors is added as needed to the stream but not until it also has passed through the conditioning processes.

While this method is simple in principle, it involves considerable mechanical equipment. Electrically driven pumps provide the water jets and circulate the brine. To cool the latter there are two ammonia compressors driven by synchronous motors, one of 75 h.p. and the other of 100 h.p. which start and stop automatically, according to the need. For each there is provided a separate motor generator set to give DC. field excitation. The circulation of air through ducts to and from the theater is provided by a low pressure blower, belt driven from a 15-h.p. motor. In the control room are switchboard, circuit breakers, disconnecting switches, and two 200-kv-a. transformers fed from the power supply of the Manila Electric Company over either of two independent 3,300-volt circuits, the duplication being introduced as a protective measure.

Erection of the machinery and installation as well as construction of the elaborate duct system was done by the Machinery Department of the Pacific Commercial Company. Gould pumps, American Blower Company's air blower, York compressors, cooler and washer, make up the air conditioning outfit and all electric equipment for the plant was supplied by the General Electric Company.



Unusual Wall and Ceiling Lights as seen from beneath the Balcony

Antimony Mining in Kwangsi Province

The hills of Tsien Feng Shen are located south of Li Tang Hu in the Penyang district of Kwangsi Province near the mountain of Chen Lung Shan, where antimony ore is found. The rocks are sandstone and shale, and the ore is mostly stibnite in association with quartz, but oxide of antimony is also found. Analysis shows a product of 64.48 per cent. of antimony from sulphide and 20.51 per cent. from oxide.

Antimony is found also in the district of Lung Ko Shan a few kilometers north-east of Tsien Feng Shan. A vein one meter thick contains stibnite and antimony oxide in association with quartz.

In addition to these two districts, antimony is also found in Pa Mien Shan where more than 80 mining companies were organized a dozen years ago. Owing to the great drop in the market price of antimony, together with disturbed political conditions in northern Kwangsi, the owners of all these mines were forced to close down, sustaining heavy losses.

Within the districts of Nantan and Hochih Fu Jung Chang is the only region where mining is still actively carried on. The deposit at Fu Jung Chang is situated about 17 kilometers south-east of Hochih Hsien. In this region three localities are reported to contain antimony ore—Pao Shi Shan, Pao Yieh Shan and Niu

Wei Shan, the first being the most important. There are other places in the vicinity known to contain antimony deposits; Tien Pao Tung 7 kilometers south of Fu Jung Chang, being the most famous.

In this area black limestone of the Carboniferous period is the only rock in which antimony ore is found. The surface of the rock is thickly covered by highly decomposed material which looks like soft black shale. On the eastern flank of Pao Shi Shan the black limestone is crossed by a number of quartz dykes, the largest of which measure 0.6 meter in width. No other igneous rocks have been found. The ore is a high grade stibnite which usually occurs in columnar texture. It is found as a rule in the ore-bearing quartz veins, some of which may attain a width of 0.6 meter but generally range from a few centimeters up to about 30 centimeters. The ore is invariably associated with pyrite and brownish-yellow cassiterite; the latter association is so rich that this mineral may be found worth working. The rock in many places is crossed by numerous white reticulated veins of calcite.

In working these deposits only the old native methods of mining are employed. At present about 20 inclines are productive, and the deepest incline reaches 150 meters, the average being a little more than 70 meters.—*Chinese Economic Bulletin*.

Reconstruction of the Municipal Gasworks at Singapore

By WALTER T. DUNN, M.I.Mech.E.

HAVING been privileged, during my tour in the Far East, to visit, under the guidance of the Municipal Gas Engineer, Mr. Fred Bedford, M.Inst. Gas E., (a portrait of whom is given below) the gasworks belonging to the municipality of Singapore, I could not fail to be impressed by the modern methods which were in evidence, not only at the works, but in the distribution department. In connection with the latter it may be mentioned that the gasholders are utilized for propaganda purposes. The value of gas as a heating agent is well set forth.

When my liner, the *Wakasa Maru* of the N.Y.K. had been made fast to the quay at the port of Singapore one of the first persons to come up the gangway was Mr. Bedford, to give me cordial greeting. I had not seen him since my retirement from the position of Secretary to the Chartered Institution of Gas Engineers, London. It was in March, 1914, that he first went there, to erect an installation of vertical retorts for the well-known English firm of Messrs. Robert Dempster & Sons. In 1922, he received the appointment of Chief Assistant to Mr. J. P. Allaway; and in the year 1925, he became Municipal Gas Engineer, on Mr. Allaway's retirement after 23 years' service at Singapore.

At the date of my visit in 1929, the rate of production of gas was 396 million cubic feet per annum; gas sold for private consumption totalled in 1928 no less than 186,610,000 cubic feet, an increase of 11.5 per cent over that of the year previous, and was the largest volume sold for private use in the history of the undertaking. The price was 4s 1d per 1,000 cubic feet for public purposes, and varied from 4s 8d to 5s 10d for private users. Gas unaccounted-for in the year was 10.4 per cent of the total manufactured, which worked out to about 240,000 cubic feet per mile of main; and as there were about 150 miles of main, much of which had to be laid in many places through swampy ground, the unaccounted-for gas may be regarded as very low.

The cost of coal at the works was £2 0s 2d per ton. Australian coal was principally carbonized, but, owing to strikes in Australia, coal was being imported from England. Tar was distilled at 300°, 450°, and 500°. In the year 1928, the gallonage produced was 198,003. The light oil is utilized as a wood preservative.

There are five gasholders, four of them being situated at the works; one of them is of 40,000 cubic feet capacity; two are of 60,000

cubic feet each; and one is of 185,000 cubic feet. Another holder is built at Kaeta Ayar, in Chinatown, about three miles from the works, and has a capacity of 600,000 cubic feet. This one is used for advertising, the area facing the water-front bearing the words in English, "Cook by Gas," and on the area which faces Chinatown is the same exhortation in Chinese characters. One of the holders at the works is used in the same manner. Two showrooms have been established; one occupies a very good position in Orchard Road, in the same block as the European shops, which are comparatively rare in Singapore, and therefore are sure to be visited by people from the west; there is another splendid show-

room in the magnificent new Municipal Building, which visitors to the town are sure to be shown over.

The lamps for the town-lighting in the districts of Geylang and Katong are fitted with automatic controllers; and in regard to the fittings business it may be mentioned that the net profits for the year 1928 amounted to £1,039 14s 6d. The net profit made by the Gas Department, after allowing for public lighting at cost, deducting interest on loan account, sinking fund and renewal charges, totalled £15,994 9s 6d.

The number of hands employed at the works is about 140. The workmen are composed mainly of Southern Indians (Temils, Telegus, etc.) and Chinese; but some Malays are employed, and a few others of Asiatic nationalities.

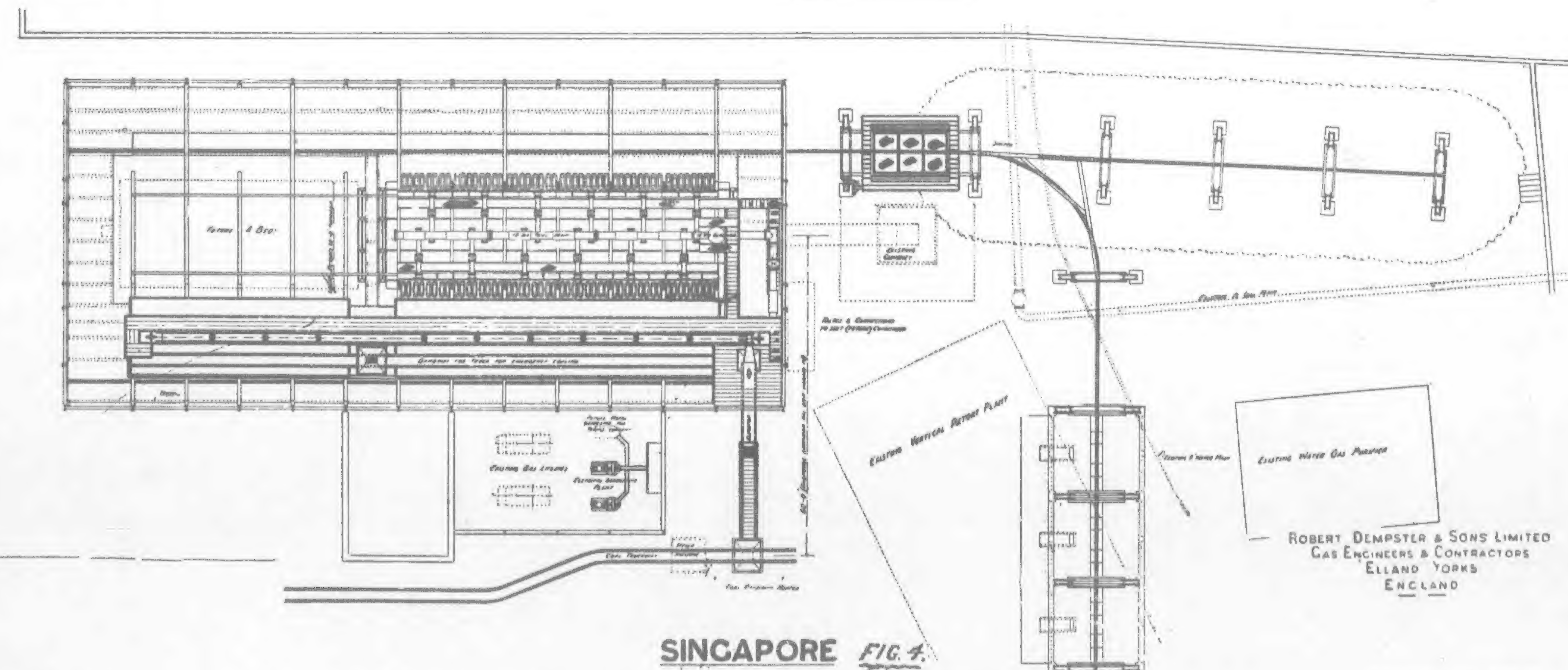
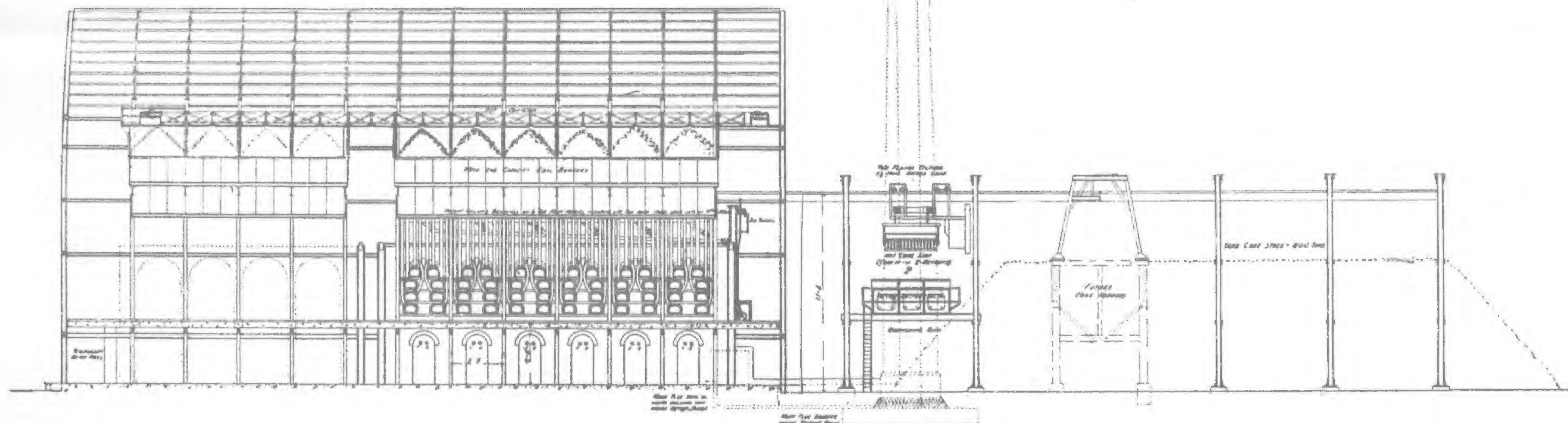
In carrying out the new works, the contractors, Messrs. Robert Dempster & Sons, Ltd. of Elland, Yorks, who were the successful tenderers, proceeded with the erection of the plant on a site which had been previously cleared for them. It is interesting to observe that, when tenders were invited, the various systems of vertical and horizontal retorts were minutely considered by the municipality, and that, although Singapore has had 18 years' excellent experience of intermittent vertical retorts, the horizontal system of carbonization was selected

for adoption. A view of the new plant in course of erection is given.

The retort house consists of a steel-framed building 130 feet long by 60 feet wide; the roof, of asbestos, is constructed in a single span, and to the eaves measures 54 feet. The interior of the house is thus exceptionally spacious and well ventilated, an important condition, having regard to the tropical climate. The eaves overhang the side walls to harmonize architecturally



F. Bedford, Municipal Gas Engineer at Singapore

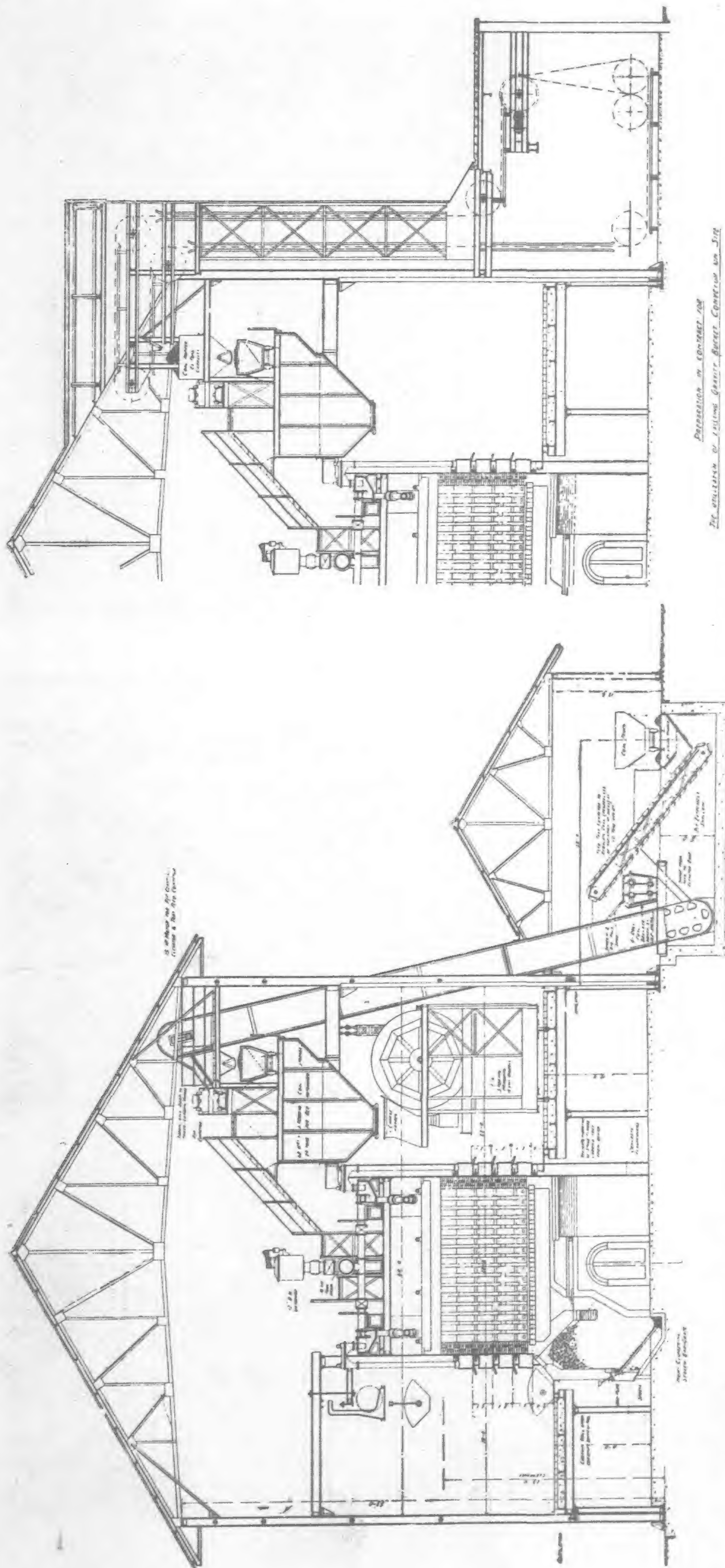


SCALE 1/4 INCH TO THE FOOT

HORIZONTAL RETORT, COAL-HANDLING & TELPHER HOT-COKE PLANTS.

DRAWING NO 30945
5

ROBERT DEMPSTER & SONS LIMITED
GAS ENGINEERS & CONTRACTORS
ELLAND YORKS
ENGLAND



Cross Section of Carbonizing, Coal-Handling, Hot Coke Telpherage and Spare Coal-Handling Plants—Robert Dempster & Sons, Limited, Gas Engineers and Contractors
Elland Yorks, England

with the houses of the adjoining neighborhood. Auxiliary buildings alongside contain the power plant, and also afford shelter to the workmen whilst in the vicinity of the coal-receiving hopper.

Eventually the carbonizing plant will consist of two benches of retorts. Whilst the house is built sufficiently large for 10 beds of eight, in order to reduce expansion strains of brickwork to the minimum and to increase facilities for letting beds up and down, the present contract is for one bench only, to contain six semi-circular main arches, together with stage floors, overhead bunkers and conveyors adequate enough for future additional and separate, bench of four arches.

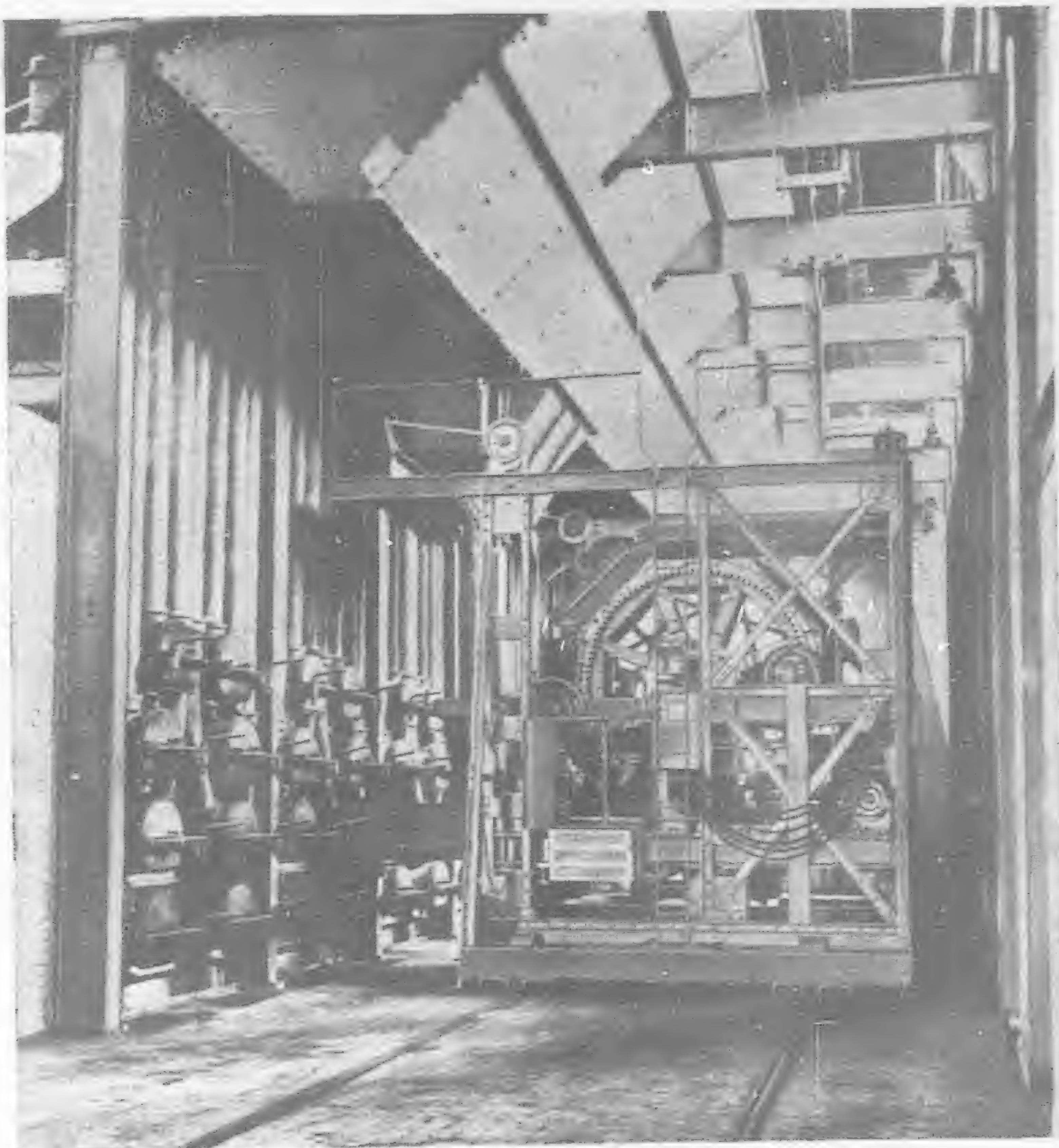
The plan illustrated herewith gives a vertical section of the retort house. From it will be noted the design of the Telpher Hot Coke Conveyor, and the coal handling arrangements. Also is shown the cross section of the carbonizing, coal-handling, hot coke telpherage, and spare coal-handling plants. The retorts themselves are of the most modern size and shape, being 24 by 18 inches, straight-sided "D" and 20 feet long of the "through" type. They are of siliceous material, moulded, and manufactured by Messrs. Joseph Morton and Company. To facilitate freight and interchangeability of segments they are made in three segments per 20 feet length. 95 per cent silica built-up retorts were considered, but the final choice was siliceous material. The retorts are set in four tiers of twos, thus giving large combustion chambers for the development of the flame of combustion, with a minimum impingement, conducing to low wear and tear.

The Dempster-Toogood regenerator producers are 12 feet deep from stage-floor level to the foundations. Excellent ventilation and spaciousness is thereby obtained for work at the fires. Optimum depth of incandescent fuel in actual gasification, is also secured. A margin of coke above is established to maintain constant the depth of fuel under gasification between the periods of feeding the fires, thus conducing to good soaking carbonizing heats, low fuel consumption, and reduction of labor in the operation of feeding the fires.

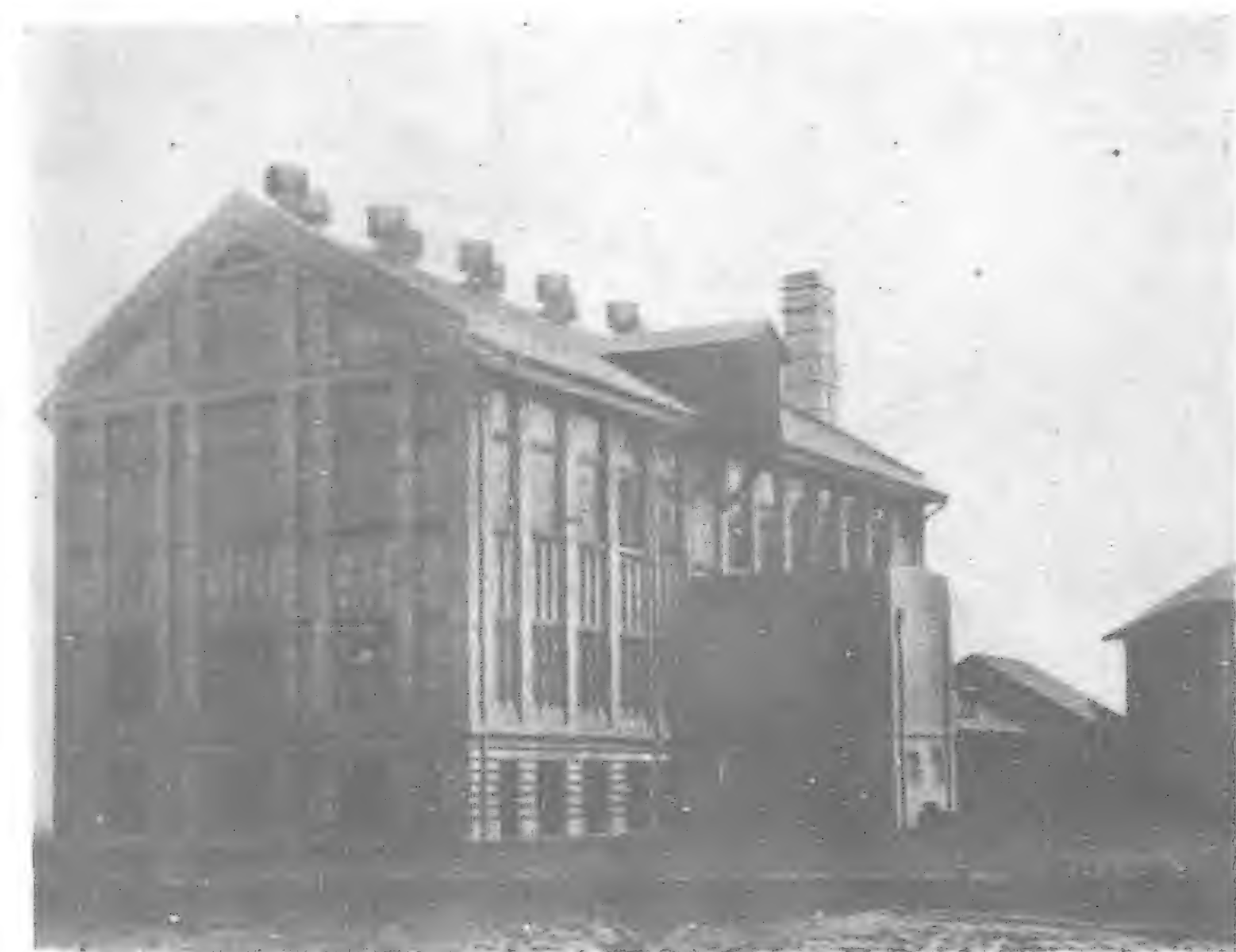
It may here be remarked that step grates have been employed at Singapore for 18 years; the advantages of inclined grates have therefore already been well proved. The grates are inclined non-clinkering screenbar grates of the straight-back type, the grate area being 4-ft. wide and the water-cooled fire-bars 6-ft. 4-ins. long. Each setting of eight through retorts is heated by one self-contained producer, so that the grate area is of liberal dimensions, whence it is possible that a percentage of gasworks' breeze may with economic advantage be gasified. With such grates the arduous labor of clinkering is obviated, and the fires only need pricking up and shaking out ash every four hours. The pan-ash contains such a small percentage of



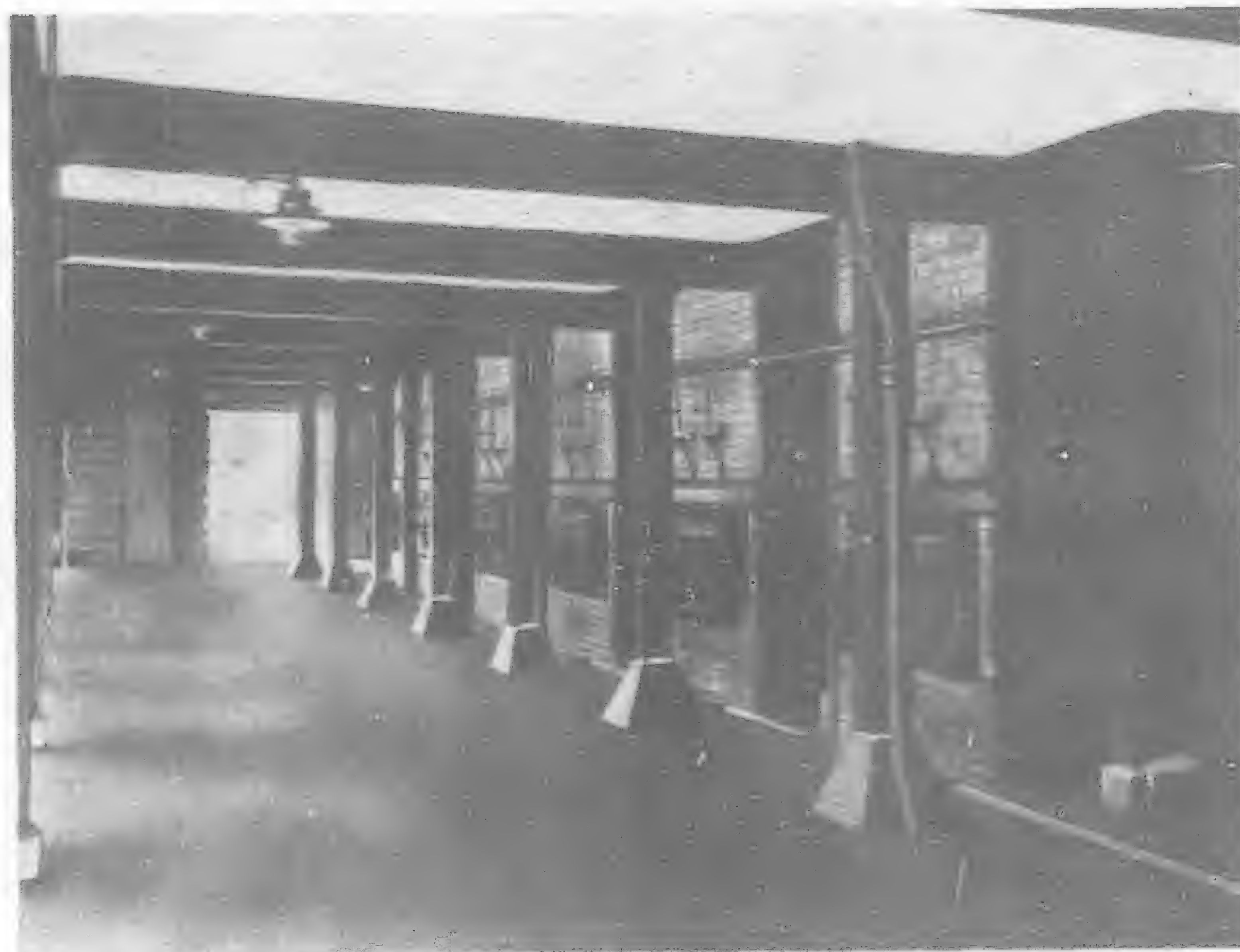
1 Showing the Telpher



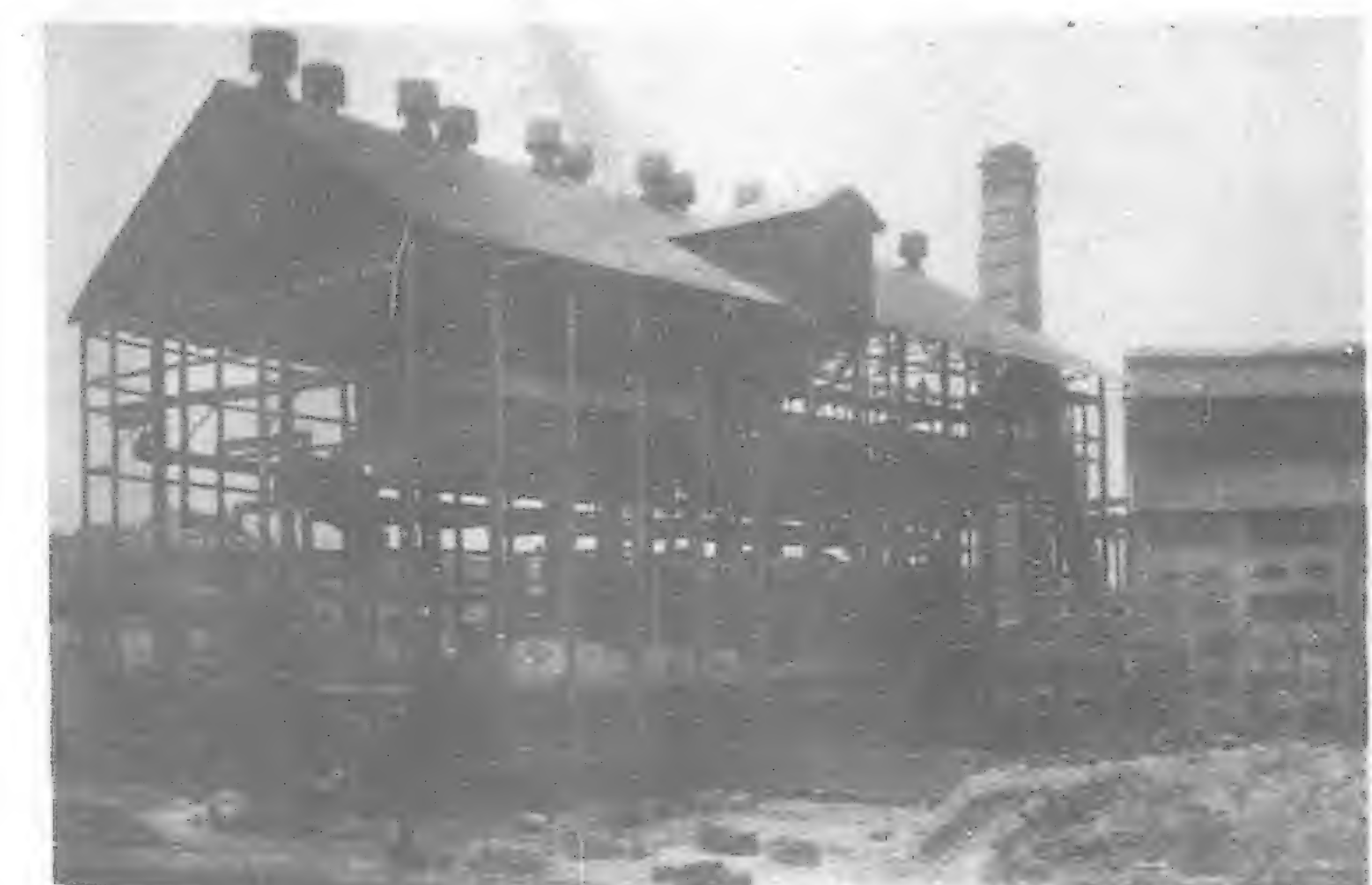
2 Stoking Machine



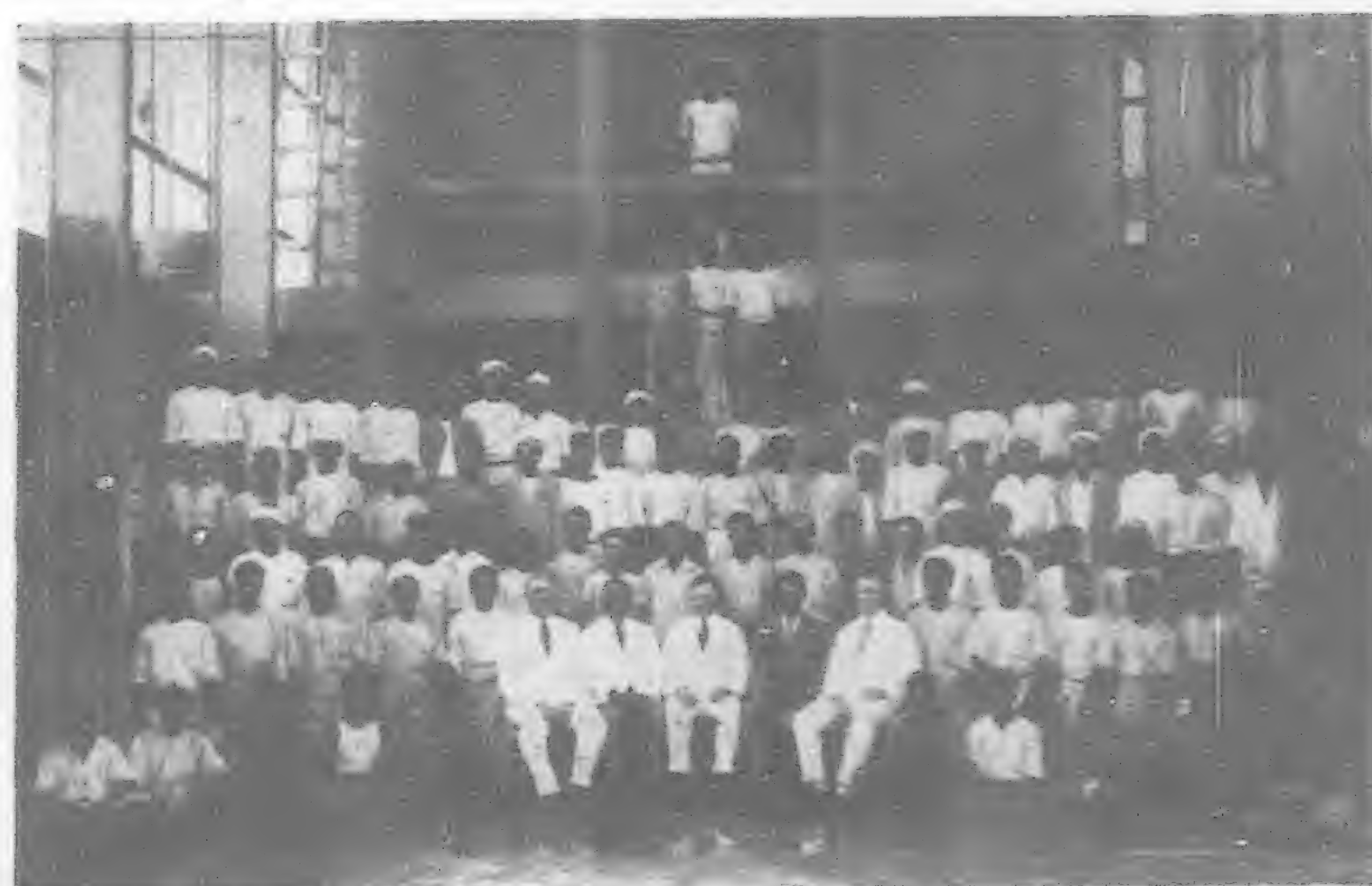
3 Retort House



4 Producers at Ashpit Doors



New Plant in Course of Construction



6 Photograph of Staff and Workmen

useable coke that it is not worth recovering. This design of grate is thus greatly to the advantage of the works' staff, and enhancement of the coke sales.

The regenerators are of tubular construction, and are built on the two-ply patent, *viz* the division wall between the ascending secondary air and the descending waste heat is of two thin tube-walls so that it is (1) thin to expedite efficient heat transmission; (2) two-ply to doubly safeguard (which is the prime factor of efficient regeneration) air-tightness throughout the long life of the regenerator; and (3) all tubes can be inspected, cleaned, and repaired; thus the unique advantage ensues that if a repair cannot be pointed on the waste heat side, it can be repaired on the secondary air side. It is of interest to remark that *both* the secondary air and the waste heat flow through rectangular fireclay tubes, thus making a very rigid construction, and ensuring the acme of air-tightness throughout, distinctly conducing to economy in the use of coke, which in turn signifies reduced wear and tear.

The stoking machine is of the well-known single-stroke Fiddes-Aldridge type. By its use the through retorts are completely filled with 15 cwt. charges. A feature of the machine is that the charge is measured for each retort, that is to say, the machine once set, charges 15 cwt. of coal with perfect regularity. The constancy of the weight of the charge thus depends more on the stoking machine than on the varying shift attendants, a feature of great value with plants sent overseas. Moreover this single-stroke machine will work off the a.c. electric current supply, and will thereby obviate the necessity and expense of transforming existing current to D.C.

The gas off-takes arrangement comprises two 6-inch ascension pipes to each through retort, fitted complete with independent hydraulic mains, foul mains, tar mains, and tar towers; and 12-in. Braddock retort house governor.

Hot coke is handled direct from the retort to the quencher in the yard, and from the quencher to the coke-yard and future coke-screens, by means of a Dempster mono-rail telpherage, the track being approximately 350 feet in length. The telpher machine is of the two-motor mono-rail type with swivelling bogies for lifting a gross load of 2½ tons (two charges of hot coke plus skip) at 75 feet per minute, and travelling with it at a speed of 600 feet per minute.

The coal-handling appliances comprise a below-ground receiving hopper into which coal is dumped from the large coal stores by means an existing one ton coal capacity ball-bearing truck. An inclined feed-regulating tray conveyor delivers the coal from the receiving hopper to an above-ground four-roll breaker; thence *via* a cased-in bucket-elevator and push-plate conveyor it proceeds at the rate of 30 tons per hour, to the overhead bunkering. Overhead coal storage bunkering of a week-end or 48 hours' capacity, is provided. The hoppers being continuous down the extent of the retort-house readily store this large quantity of coal—250 tons, in position for use by the stoking machine, whence the maximum despatch and economy is associated with the coal-handling.

It is the intention to utilize an existing gravity bucket-conveyor and gas engine drive to form a complete standby coal-handling plant. Preparation for this spare plant is indicated on the drawing appended by the two dormers in the roof.

The power-generating plant consists of duplicate steam-driven sets of Sissons' engines, and G.E.C. electric a.c. generators, each of 70 b.h.p. running at 500 revs. per minute. The switch-board is designed to permit of town's current being brought in at a future date if required. All motors are of the G.E.C. make, and of as few different sizes as possible, in order to be interchangeable as far as may be practicable.

The present contract provides for the provision of six through beds as follows:—

12-hour charges ...	1,000,000 cubic feet of gas per diem.
8-hour " ...	1,400,000 " " " " " "

and when the house is complete with equipment of 10 beds:—

12-hour charges ...	1,600,000 cubic feet of gas per diem.
8-hour " ...	2,300,000 " " " " " "

As to the foundations of the building, they were designed and executed by the municipality officials of Singapore. The loading drawings in detail were furnished by the contractors Messrs. Robert Dempster & Sons, Ltd., and it is of interest to state that a piled foundation was put in, thus ensuring the utmost safety against settlement, in view of the sandy nature of the sub-soils of Singapore. The foundations were finished and erection of the building commenced on August 1, 1931. The accompanying illustrations will

convey an idea of the rapid progress made, which has resulted in the estimated period of twelve months being reduced to nine months only, a commendable achievement; one of great credit to all concerned in the matter, especially in these days of pessimistic outlook.

Slow fires were started in the plant on February 2, 1932; gaseous firing commenced on April 11; and gas manufacture on April 23.

The process of construction has gone through with perfect smoothness throughout, and there is every indication that the contractors' guarantees will be more than fulfilled.

New Philippine Mill Nears Completion

THE new sawmill erected by the Findlay Millar Timber Co. of Manila, Philippine Islands, is nearing completion and is expected to be ready for operation early in July. This mill replaces the old mill destroyed by fire on July 4 last. The mill is situated at Kolambugan on Misamis Bay, Island of Mindanao, and will have a capacity of 3,000,000 feet per month, operating one shift.

The plant is modern in every respect, the main units consisting of two eight-foot headrigs, two edgers, three vertical resaws, and one 16-foot automatic trimmer. The remanufacturing plant, which is a continuation of the main plant is equipped with rip and cutoff saws and the latest type of planers, matchers, etc. The installation of live rolls and mechanical transfers and other labor-saving devices will reduce the labor in the plant to the minimum.

The power is supplied by three engines capable of developing 1,000 brake horse-power, steam being supplied from a battery of ten boilers. Units of the plant which were not affected by the fire last July consist of dry kilns, electric light plant, ice and cold storage plant, machine shops, and locomotive repair plant. A special feature of the Kolambugan plant is the shipping facilities



New sawmill of the Findlay Millar Timber Company, taken from the southeast and showing a portion of the log pond

of the wharf, which is 1,600 feet long—one of the largest piers in the Orient—and can berth six deep sea vessels at one time. Direct shipments are made from Kolambugan to all parts of the world.

The mill frame is approximately 71 feet wide by 290 feet long. In rebuilding the sawmill much of the transmission machinery in the old mill was used, employing belts for power transmission. The new equipment installed largely was manufactured by The Prescott Company of Menominee, Michigan, and included: Log haul, steam drag saw with steam dog, 3-arm 16×36 kicker, 4 arm 16×36 kicker, 3-arm 16×36 log stop, 4-arm 16×36 log stop, two 10×12—6-foot niggers, 6-block 72-inch carriage, 3-block 66-inch carriage, two 12×16 geared twin engine feeds, two 8-foot bandmills, two 12×60 roller bearing edgers, two 60-inch swing-up saws, six-saw floor slasher, two 7-foot vertical resaws, 16-saw heavy mechanical lift trimmer, cable sorter. Both carriages are equipped with electric networks and electric taper devices.

The company also own and operate plants at Manila, Island of Luzon, and at Milbuk, on the south coast of the Island of Mindanao. The main office of the company is in Manila, W.G. Serim is representative in the United States with offices at 910 Central Building, Los Angeles.—*The Timberman*.



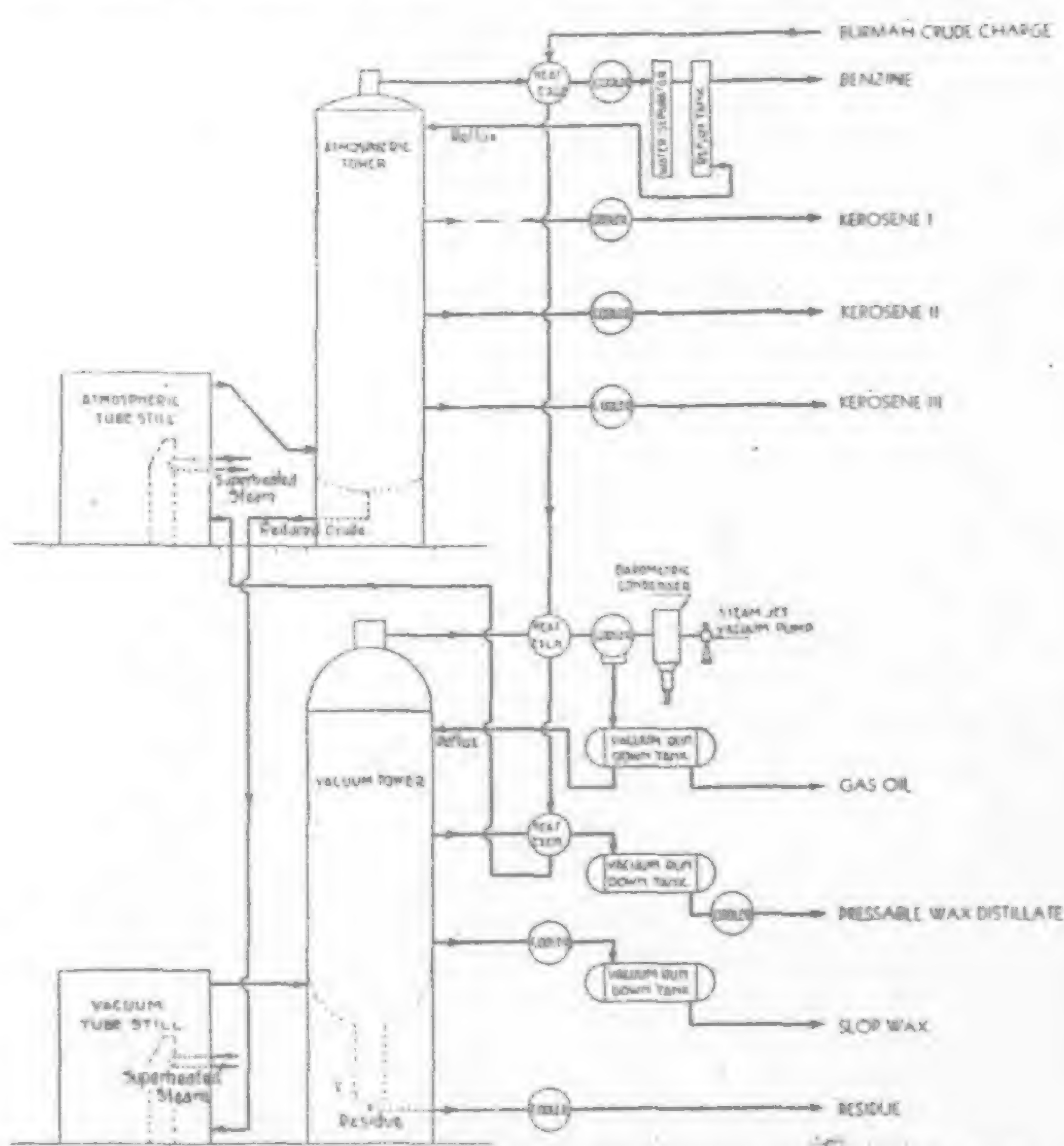
Two stage distillation unit installed at the refinery of the Burmah Oil Company near Rangoon. The tube still in the center serves the atmospheric bubble tower and the still in the left background serves the vacuum bubble tower. Each tube still is equipped with its own stack. The brick building in the right background was erected several years ago and is now being used as a pump and receiving house for the new distillation unit.

Modern Distillation Methods in Rangoon

A LARGE two stage distillation unit has recently been put into service for the Burmah Oil Company near Rangoon, Burmah. This distillation unit is designed to charge Burmah crude and recover eight different fractions, including overhead lubricating stocks.

The equipment is of the typical two stage design. However, additional controls and piping have been installed to give the unit an unusually high measure of flexibility in operation.

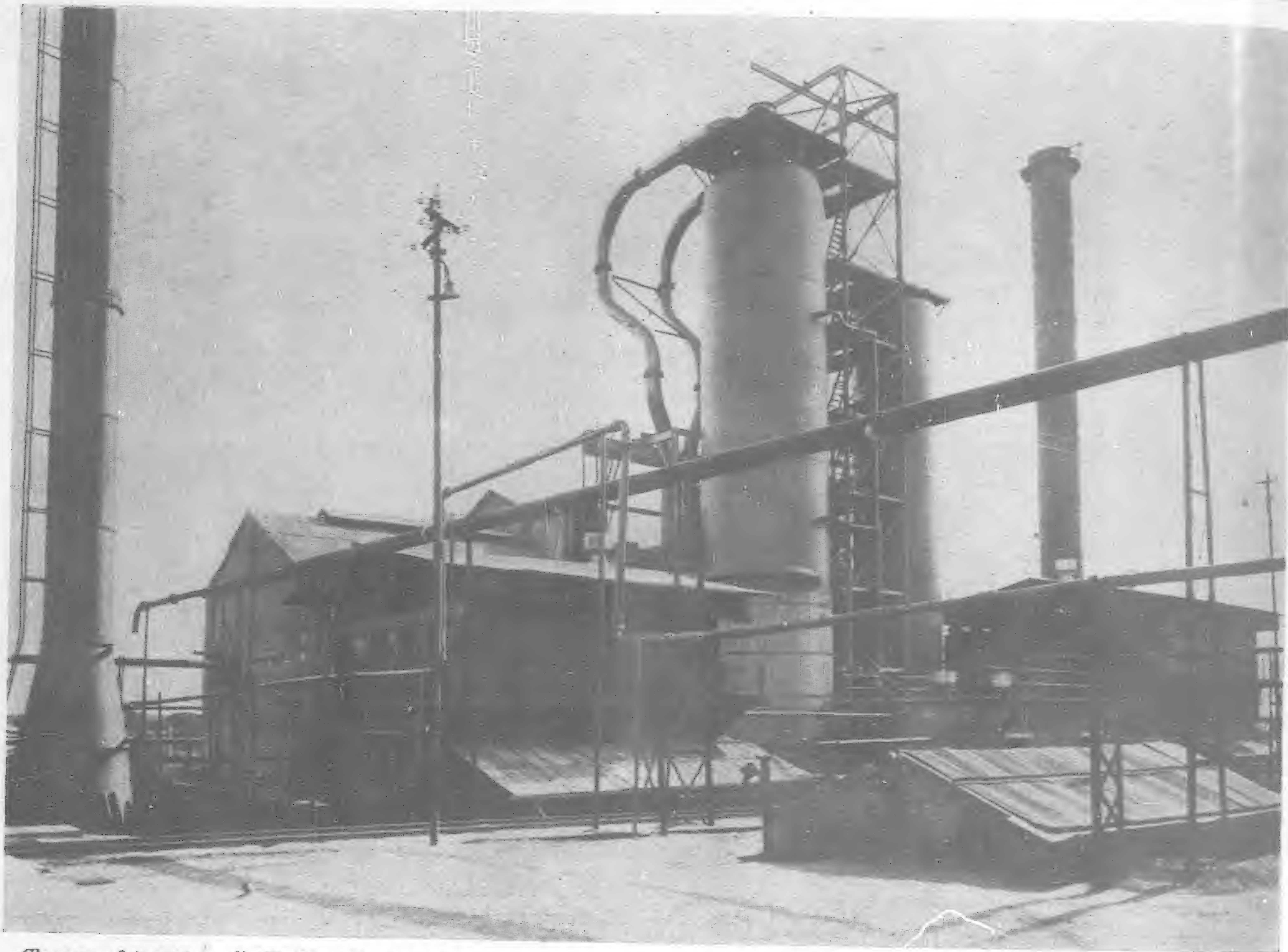
Crude is picked up from storage and heated in heat exchangers to 325 degrees F, before being delivered to the atmospheric tube still or heater. The atmospheric still increases the temperature of the crude charge to 535 degrees F, at which temperature it is delivered to the vaporizing chamber of the atmospheric fractionating tower. Gasoline or benzine is removed overhead as vapor, and three liquid streams are removed from the side of the tower.



Flow diagram showing method of operation of the two stage atmospheric-vacuum unit near Rangoon. This unit charges 9000 bbls. of oil per day.

The unvaporized residuum is pumped from the bottom of the tower and delivered to the vacuum tube still or heater, where the temperature is raised to 705 degrees F. The reduced crude at this temperature is delivered to the vaporizing section of the vacuum bubble tower where it is fractionated into an overhead vapor stream of gas oil, two liquid side streams and a flux residuum. Gas oil vapors are condensed in a heat exchanger. The gas oil condensate and the two liquid side streams flow by gravity to vacuum rundown tanks connected by balance lines to the steam jet air pump. The fractions are removed from the rundown tanks by reciprocating pumps and are delivered to storage.

Vacuum is maintained on the vacuum tower by a complete vacuum actuating apparatus connected to the hotwell of the final gas oil condenser. Vacuum balance lines also are connected to the three rundown tanks so that the side



Close-up of two stage distillation unit showing vacuum tubs still in the foreground with stack at the extreme left and vacuum bubble tower at the immediate right of the tube still. In the right background is the atmospheric still with stack and fractionating tower.

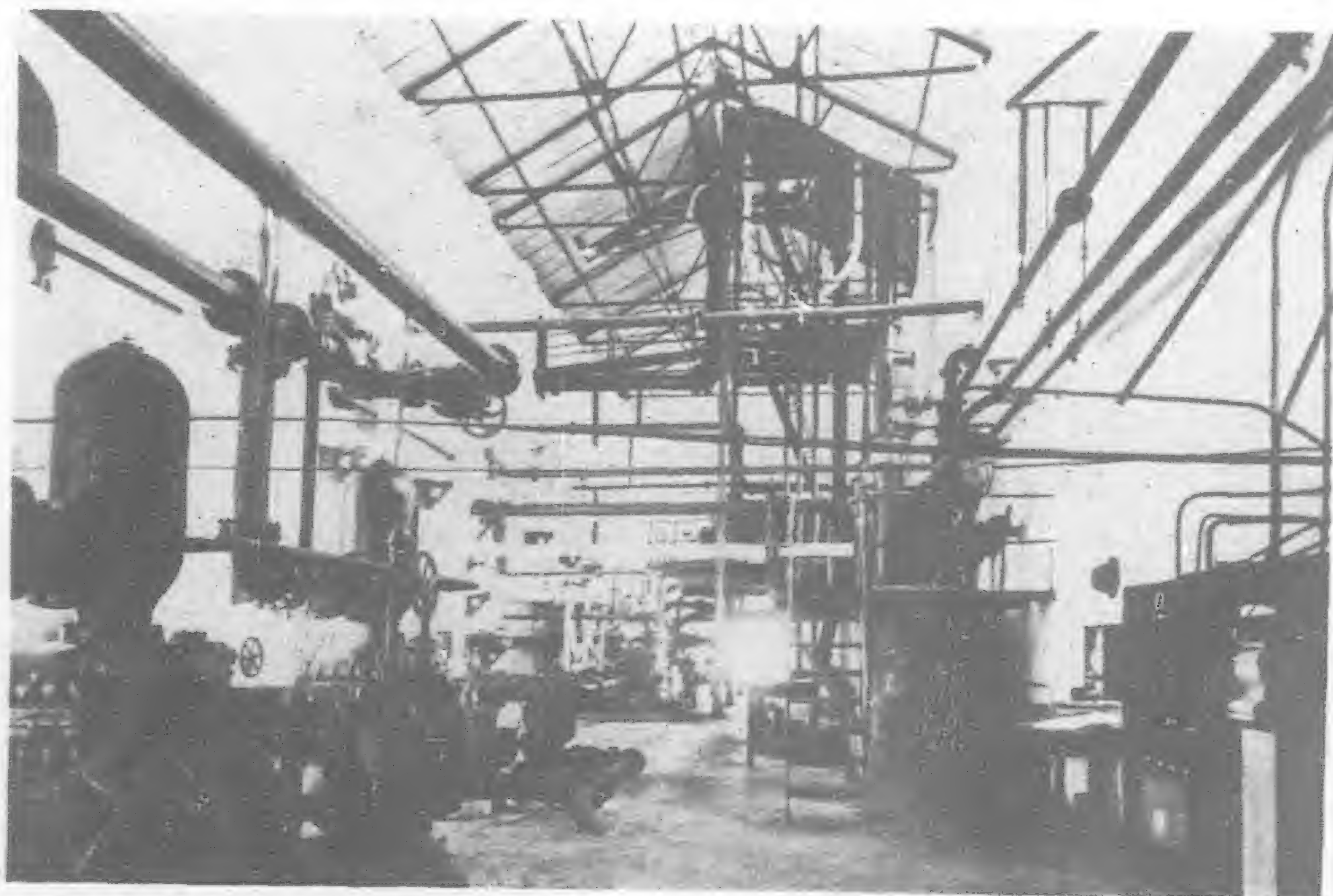
streams will flow into them by gravity. The actuating equipment includes a thermo compressor, a barometric condenser and a steam jet air pump. The thermo compressor removes uncondensed vapors from the gas oil condenser. These vapors are compressed to a pressure at which they can be condensed with the relatively warm circulating water available in this refinery. These compressed vapors are then condensed in the barometric condenser and the air and permanent gases are removed by the steam jet air pump. The thermo compressor thus makes it possible to operate the unit at a much higher vacuum than could otherwise be obtained with the warm cooling water.

Each of the tubular oil heaters is equipped with an integral superheater which receives exhaust steam from the pumps. This steam is superheated for process work within the tower. The use of

highly superheated steam for process work, reduces the total amount of steam which is required. Superheated steam is also desirable because it does not cool the oil or vapors within the tower.

The unit was erected in a limited space in order to take advantage of existing buildings in the refinery.

The site selected for the new distillation unit was between a railroad track and a long narrow building which was suitable for the pump house and control room. The space was relatively wide but of shallow depth between the track and building. The two towers were therefore installed between the stills instead of in their usual position behind the stills. The vacuum unit was placed on the left and the atmospheric unit at the right. The stacks serving the two stills were located at the extreme ends and were connected to the stills by overground flues.



Interior of pump and receiving house. The look boxes can be seen on the platform at the right. The stairs in the background lead to various platforms around the fractionating towers and heat exchangers.

The heat exchangers, condensers and coolers are all of the shell and tube type and are placed between the pump house and the fractionating towers. The entire arrangement is compact, yet accessibility was not sacrificed. On the other hand the amount of piping necessary was less than would be required were the more usual arrangement used.

The capacity of the unit is 300,000 Imperial gallons per day or about 9,000 barrels. The demand for motor fuel in Burmah and surrounding Asiatic countries, is not as great as in Europe and America, but there is a large demand for kerosene. The unit was therefore designed to obtain a maximum yield of various grades of kerosene as can be seen from the accompanying flow diagram.

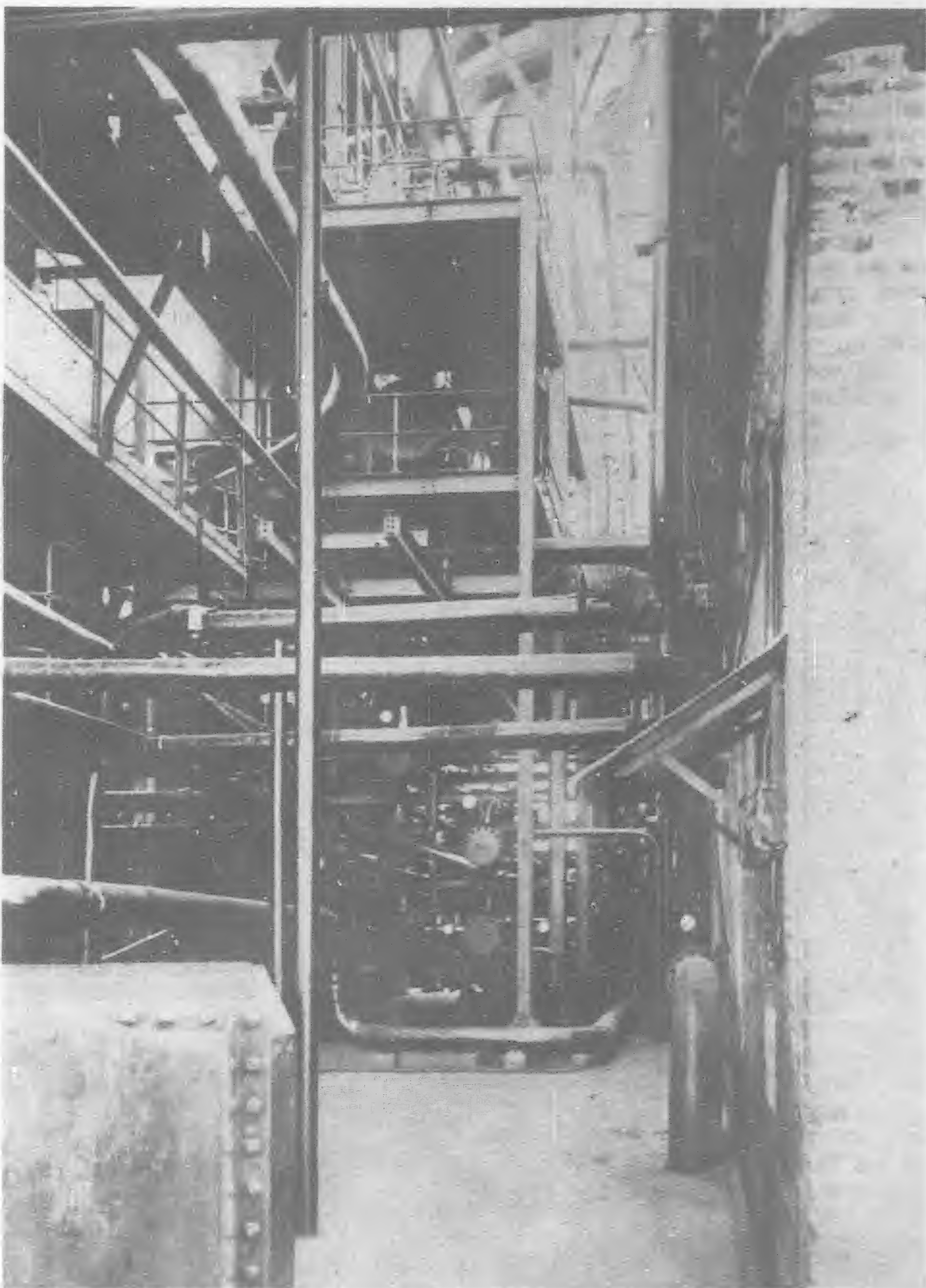
Kuznetz and Magnitorsk Mills

The second blast furnace at the Kuznetz steel mill was scheduled to be blown in during the latter part of May. The experience gained during the initial operations of the first battery of coke ovens made it possible to start the second unit with much less difficulty. It is expected that during the second quarter of the year 60,000 kilowatts of installed power will be ready for use from the electric station.

At present every effort is being made to rush to completion the first section of the open hearth and the rolling departments, which are scheduled to start operations by the end of the second quarter. The number of persons living in the Kuznetz settlement now totals 200,000, and construction of living quarters is being pushed to provide adequately for them.

On March 1 the seven-hour day was introduced at the Magnitogorsk steel plant in the Urals in all shops already operating. These included the mechanical, casting, foundry and forge shops. Preparations are being made to institute the shorter work-day in other departments.

The first shipment of Magnitogorsk pig iron has been shipped to the "Red Putilov" plant in Leningrad and used in the production of various types of machinery. According to engineers and the administration of the plan, this iron compares favorably in quality with English and Swedish iron. Part of the first shipment was used for spare parts for tractors which have already been shipped to machine and tractor stations. Other Leningrad and Moscow plants which have used small quantities of Magnitogorsk iron reported very satisfactory results.



Heat exchangers at the Burmah Oil Company's refinery. All the exchangers are placed between the fractionating towers and the receiving house. Although they look crowded in the picture there is actually ample room to remove the tube bundles. There is also a complete set of platforms around the vapor heat exchangers which make them readily accessible for repairs and inspection.

Irrigation Project Completed

Late in May in the Wei Pei district of Shensi Province there was formally dedicated a great irrigation project which has been under construction for the past two years as one of many measures designed to prevent the famines which so many times have scourged Shensi and Kansu provinces.

A huge body of water, known as the Honolulu Dam because so much of the money required for its construction was raised by Chinese in Hawaii, has been made at Wei Pei under the joint auspices of the Shensi Provincial Government and the China International Famine Relief Commission.

Rock tunnels and canals have been built to carry water to crops over many miles of countryside which otherwise would be parched and cause death to thousands.

Not only has the China International Famine Relief Commission provided food for thousands since the severe famines of 1929 and 1930 but its main efforts have been devoted to preventive

work. In addition to irrigation projects, reforestation and river conservancy, the Commission has constructed roads and improved communications so that in the event of future disasters supplies can be distributed rapidly to regions which hitherto have been isolated.

Motor highways are gradually spreading through Shensi and Kansu and over these motor-cars and trucks are operating in constantly increasing numbers.

Thirty miles from Pingliang, in Kansu Province, Shensi officials and the directors of the China International Famine Relief Commission are planning to build a graded highway over the famous Luh P'an Shan mountain as part of the extensive Si-Lan road project. The survey for this highway has been completed and work has started on the first section of the new road.

The road over Luh P'an Shan mountain will obviate a detour via Kuyuan and will reduce the journey between Pingliang and Lanchow by 40 miles.

China's First Scientific Bakery

Bakerite Factory Will Start Operations With Force of 300 Employees Next January

OPERATING in what is almost a virgin field, and with the added advantage of being the first modern, scientific factory of its kind in China, the Bakerite Company, Fed. Inc., will start work in its new factory at Sinza and Ferry Roads in Shanghai on the first of the New Year, according to Mr. C. H. Raven, president and manager of the Bakerite Co.

The new factory, which is now under construction with the ground floor already completed, will be the home for one of the largest and most hygienic bakeries, candy and ice cream manufacturing in the Far East. Similar to the American Biscuit Company, or the Uneda Biscuit, which have become household necessities throughout America, the factory will be in a position to supply Shanghai and the vicinity with all kinds of biscuits, bread, cakes, candies, chocolate, spices, and ice cream, produced in clean, light, sanitary surroundings, with the aid of the latest and most up-to-date ovens and machinery known to bakers and candy makers.

This factory, while not the first or only one of its kind in Shanghai, will be the largest and most modern, because of the installation of complete mechanical devices and because of the special construction of the building. Many smaller bakeries and candy shops in Shanghai produce together about fifty tons of biscuits and allied products every day; the new factory will produce about five tons each day, a large proportion of the total output.

Mr. Raven, who in addition to being manager of the new plant is also manager of the Chocolate Shop on Nanking Road, will have as an efficient assistant in the factory Mr. C. J. Baker, engineer in charge, who formerly represented Joseph Baker Perkins & Son, manufacturers in England of all modern types of bakery ovens and machinery. Mr. Baker understands the business thoroughly, and has been Far Eastern representative of the company for ten years, during which time he has established large bakeries in India and Japan.

To Employ 300

The factory will operate as both a retail and wholesale establishment. Different kinds of ice cream will be made, as well as hard candies, put up in glass jars, chocolate covering to be sold in bulk for frosting, candy making, etc., all types of bakery products, and in addition, spice manufactures.

Three hundred employees, men and women, will be employed at the factory beginning next December, Mr. Raven said. According to representatives of the Asia Realty Company, whose architects have designed the factory, the building will be a modern, fireproof, up-to-date five storey one, planned to facilitate the speedy and efficient manufacture and distribution of all products. Emphasis has been laid on cleanliness and hygienic conditions: on entering the building all employees, after punching the time clock, go to their respective locker rooms where they take their compulsory morning showers and don immaculate white clothing and aprons before any work is begun.

Allows For Expansion

Employees will also have a company dining hall, separate from the main building, where they will have their noon meals. The building, which will cover about one and a half mow of land, is being constructed to allow for ample expansion in the future, the boiler room being built as a separate unit.

The ground floor of the factory is entered through wide iron drive-gates in the compound wall. On this floor will be found the huge store rooms and cold storage rooms, the latter holding about 200 pounds of products. Here also will be the ice cream plant, the shipping offices, and the manager's offices.

Bread will be made on the first floor. Two modern steam ovens are to be installed, one a draw-plate oven for pan bread and one a Peal oven which is used for French bread, rolls, and other products that must be baked on a hearth. These include all types of biscuits, soda crackers, etc. Biscuits will be of all kinds—the sweet cakes and the regular English biscuits. Forty thousand pounds of bread can be produced each day, and the biscuit oven has a capacity to produce about 6,000 pounds. Flour bins and mixing tables will be placed around the room, connected by conveyors which eliminate the necessity of touching the dough by hand. Everything is to be done by machinery.

Candy in Two Minutes

The second floor will be the location of the candy room. Candies will be made by the latest vacuum steam process. This speeds up the work—candy can be cooked in two minutes by steam, while it takes 30 minutes to make it with gas, and it is made much better by the former. Hard candies will be the speciality, though chocolates and candy-centers will be manufactured.

The third floor will be used for the manufacture of biscuits also, and for the packing of products, which are moved up and down the building to shipping room and trucks by electric lifts.

On the top floor, chocolate will be made. The chocolate is not imported already manufactured for the candies and cakes; it will be made from the cocoa beans and butter bought outright and shipped into Shanghai.

Spices of various kinds will also be made and packed at the factory.

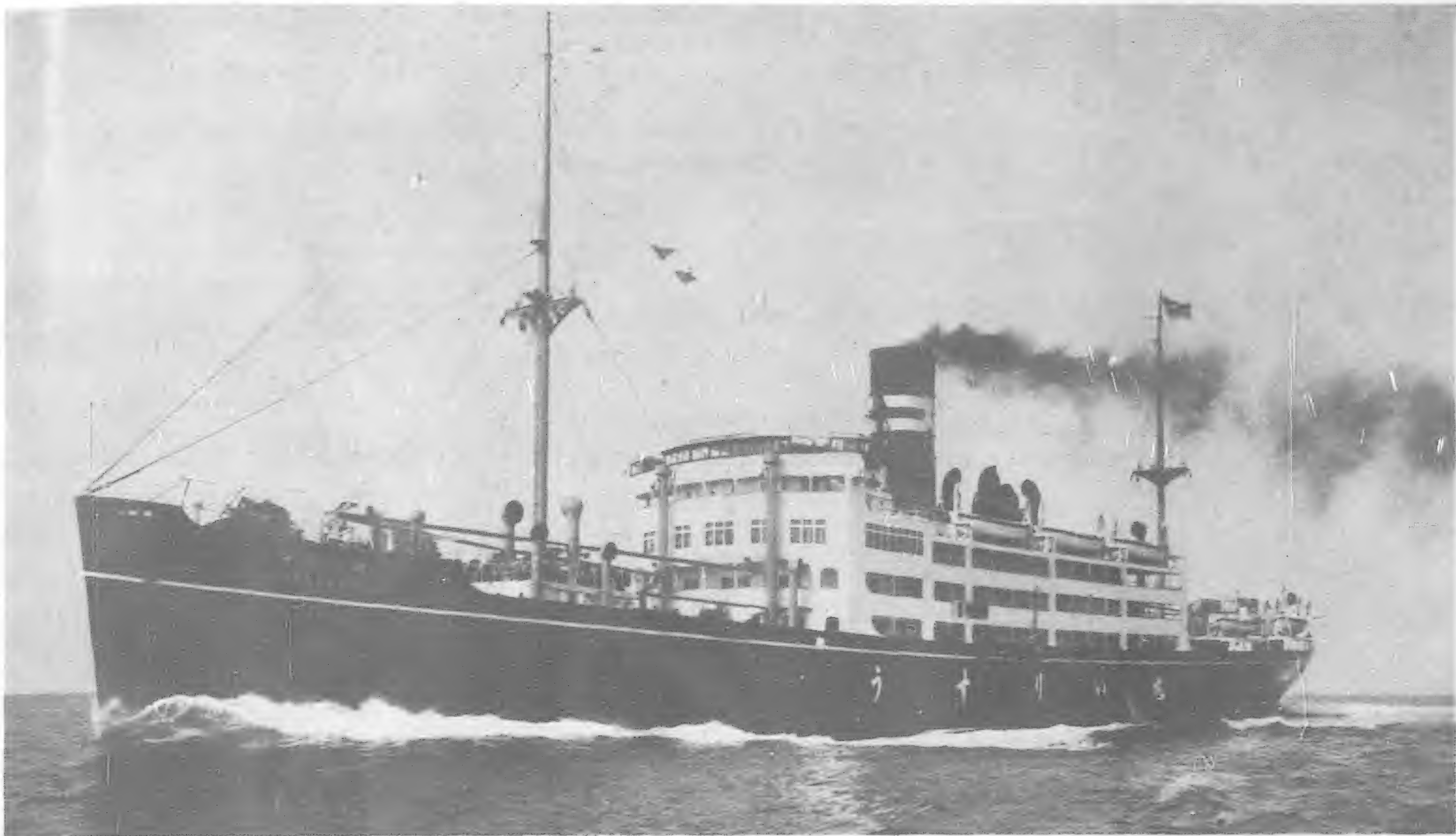
Clean Air Provided

This building will have no open windows. The reconditioned air is supplied by suction and discharge fans, covered by screens, which eliminate any possibility of dirt or dust or insects getting into the air inside. Most of the walls will be composed of windows, however, to allow for plenty of light and sunshine. The walls are constructed of reinforced concrete. Air will be heated,

(Continued on page 439)



The New Bakerite Factory



The Steamer "Ussuri Maru" on Trial Run

The New Passenger and Cargo Steamer "Ussuri Maru"

Built for the Osaka Shosen Kaisha's Osaka-Dairen Service by the Mitsubishi Shipbuilding and Engineering Company at Nagasaki

WITH a vast tract of territory comprising an area of about 440,000 square miles, covered with a rich expanse of forests and endowed with abundant mineral and natural resources and inexhaustible facilities for agriculture and live stock rearing, the regions of Manchuria and Mongolia have now been launched as an independent Manchurian State, which is the focus at the present time of international attention. With a population of only about 34,000,000 people and with industry in an undeveloped condition, there are untold prospects for exploitation and expansion. The region of Manchuria and Mongolia is indeed what may be termed the "life line" or "vital zone" of Japan in the defence of which Japan staked her life at the sacrifice of an enormous number of lives and at a tremendous expenditure. It will be realized that the development of this vast territory of Manchuria will devolve mainly on Japan.

Consequently, transportation and communication between Japan and the Manchurian State, it will be admitted, has assumed a greater importance than before, and it is a matter of deep significance that such a new superior liner as the *Ussuri Maru* has been placed on the Osaka-Dairen service which is one of the principal routes for traffic between the two countries.

The *Ussuri Maru* is a high speed passenger and cargo ship, constructed at the Nagasaki Shipyard & Engine Works of the Mitsubishi Shipbuilding & Engineering Company Limited to the order of the Osaka Shosen Kaisha, like her sister ship the *Ural Maru* which is already in service on the same run. The vessel was completed on March 25, 1932, and sailed from the port of her birth, Nagasaki, on the day following. She presented an imposing sight lying alongside the pier at Osaka where a big reception was held on board. On April 3 with a full complement of passengers in all classes, she sailed on her glorious maiden voyage from Kobe, and on the 6th arrived at Dairen completing her first voyage in a most satisfactory manner. Local papers reported that the number of passengers carried on the voyage was 869.

Before proceeding to the description of the vessel, one may venture to describe the history of how the ships of the Osaka Shosen Kaisha on the Dairen run have been developed. The vessels specially designed for this service by that shipping company number four, the *Harbin Maru*, *Baikal Maru*, *Ural Maru*, built in 1914, 1921 and 1928 respectively, and the present one, the *Ussuri Maru*.

With the construction of each vessel more and more improvements have been incorporated. Of the above four vessels, the first was built by the Kawasaki Dockyard while the others were all constructed by the Mitsubishi Company. Before the *Ussuri Maru* was put into commission, the Osaka Shosen Kaisha had maintained one sailing from Kobe every three days, with the *Hong Kong Maru* added, and with the completion of the *Ussuri Maru* they have added two vessels, namely this one and the *American Maru*, thus now running six vessels in the service. They now not only maintain one sailing every other day, but have rail connection from the pier to the Dairen Railway Station, thereby accomplishing a long felt want of providing through ship and rail facilities.

It may be of interest to give a comparison of the aforementioned four vessels.

Principal dimensions	Harbin Maru	Baikal Maru	Ural Maru	Ussuri Maru
Length	400'-0"	400'-0"	405'-0"	405'-6"
Breadth	50'-0"	50'-0"	55'-0"	55'-0"
Depth	30'-0"	30'-0"	33'-0"	33'-0"
Gross tonnage ..	5,169.00	5,243.14	6,376.92	6,385.57
Type of vessel ..	Full scantling three-decker.	"	Complete superstructure with fore-castle.	"
Draught fully loaded ..	24'-4"	23'-1"	23'- $\frac{3}{4}$ "	23'-0.86"
Deadweight	5,573	4,890	5,345	5,288
Speed (maximum) ..	16.7 knots	17.2 knots	*17.02 knots	18.06 knots
Sea speed	12.5 knots	12.5 knots	14.0 knots	14.5 knots

* These trials were made in very rough weather, hence the figures are low.

ACCOMMODATION :				
1st class..	55	92	68	65
2nd „ ..	113	140	129	105
3rd „ ..	430	568	577	644
Total ..	598	700	774	814
Cargo capacity in cubic feet ..				
234,570	218,172	188,325	186,407	
Number of holds ..	3	6	4	4
Number of hatchways ..	3	6	4	4
Largest hatchway ..	24' x 16'	20.5' x 14'	35' x 18'	35' x 18'
Main engines (twin screw) ..	Triple expansion	Parsons geared turbines	Mitsubishi-Zoelly geared turbines	Mitsubishi-Zoelly geared turbines
Boilers number ..	4	4	5	5
Size ..	12' x 14.5'	12' x 15'	12' x 15'	12' x 15'
Normal pressure ..	200 lbs.	200 lbs.	225 lbs.	225 lbs.
S.H.P. maximum ..	5,100	6,518	6,658	6,979
ADMIRALTY CONSTANT :				
Maximum speed ..	221	252	*231	264
Speed at half load ..	—	—	277	292

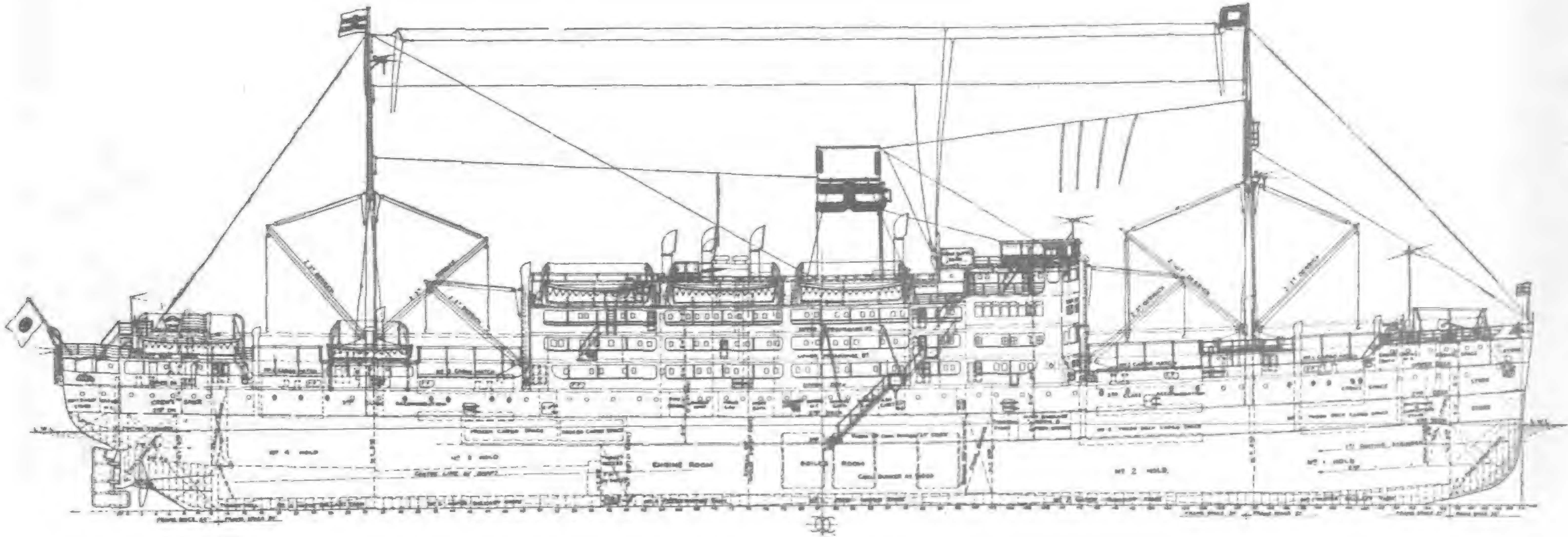
appliances, as well as in the hull and general arrangement of the ship, the number of holds and hatchways has been reduced, while the sizes of the hatchways have been considerably enlarged.

General Arrangement

The *Ussuri Maru* is a twin-screw steamer built under the special survey of the Japanese Ministry of Communications and Lloyd's Register of Shipping. Her classification by the Japanese Authorities is a first-class ocean-going vessel and she has been assigned 100 A1. "with freeboard" by the Registration Society. The leading particulars are given above.

The vessel is of the complete superstructure type with two complete decks, and a third deck extending about three quarters of the length of the ship. Above the upper deck, there are provided a forecastle, and amidships upper and lower promenade decks and a boat deck, and on the fore part of the latter, a flying bridge deck. At the stern there are arranged an aft boat deck and a docking

*These trials were made in very rough weather, hence the figures are low.



As mentioned above, each vessel has embodied further improvements on its predecessor, and a case in point is that of speed, for the *Ussuri Maru* gave 18.06 knots representing an increase of about 1.5 knots over the maximum speed of the *Harbin Maru* which is 16.7 knots. The designed speed for the former is 14.5 knots, as against 12.5 knots of the latter, effecting a "speed-up" of as much as two knots.

Another interesting fact indicative of the requirements of the line is the gradual decrease in cargo space and the corresponding increase in passenger accommodation. Though first-class and second-class accommodation does not show much change the third-class presents a marked difference, which is made clear by the fact that while the *Harbin Maru* is capable of accommodating 430 persons, 644 persons can be accommodated in the *Ussuri Maru*, which shows an increase of just 50 per cent.

A further noticeable feature compared with preceding ships is that, as a consequence of improvements incorporated in the loading and unloading

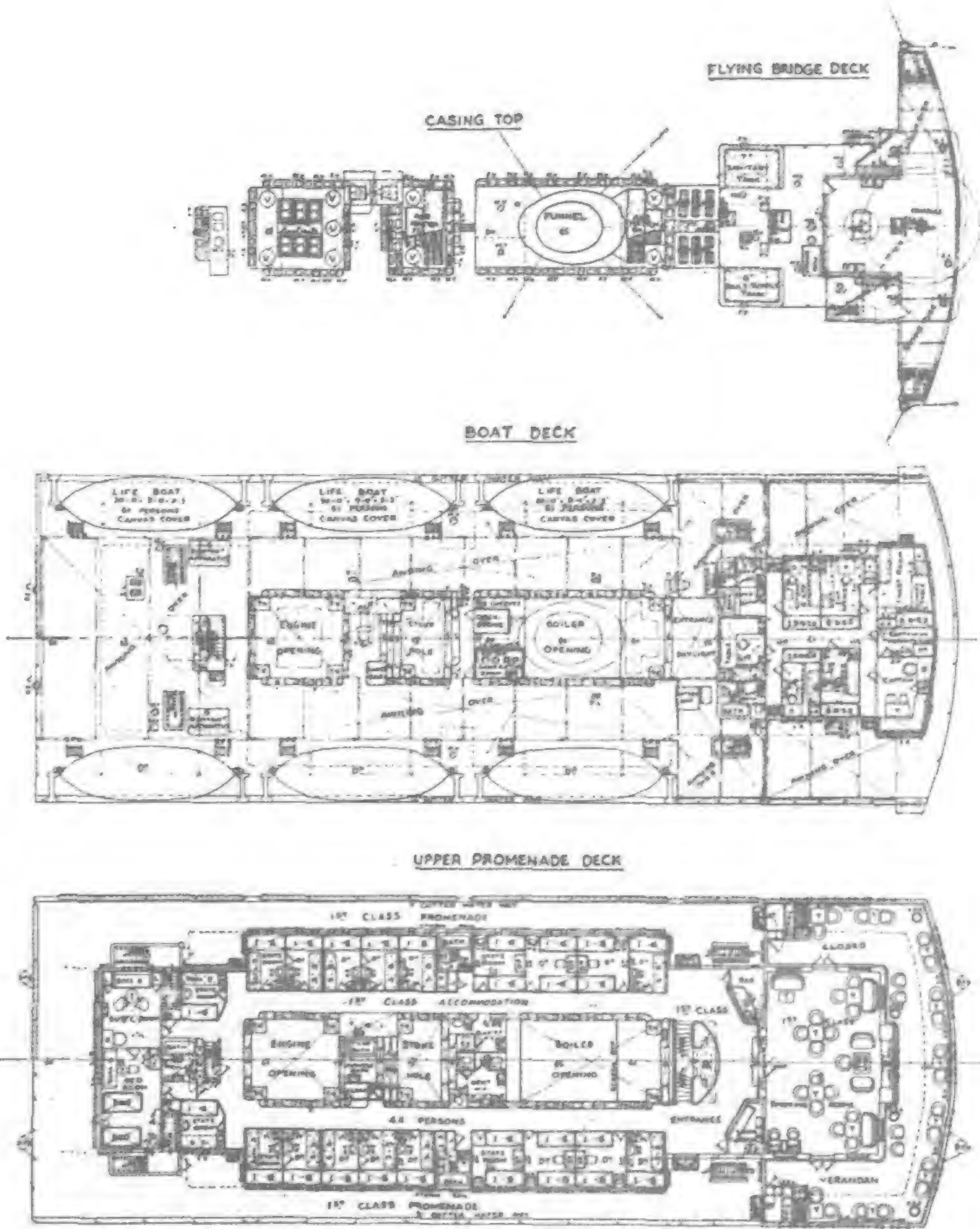
bridge. The stem is of the flexible type, well raked forward, and the stern is of cruiser form.

The deck-houses which tower up imposingly amidships, together with two well-balanced masts and a funnel, give an elegant and stately appearance to the vessel. The boat has six transverse watertight bulkheads and a cellular double bottom extends fore and aft between the peak tanks, which are devoted to the carriage of fresh water. The double bottom is allocated for feed water, fresh and ballast water tanks.

Life saving appliances are provided in accordance with the requirements prescribed by the International Convention for Safety of Life at Sea, 1929, for short international voyaging.

On the boat deck forward there are arranged captain's rooms, chart room and wireless telegraph office and operators' room.

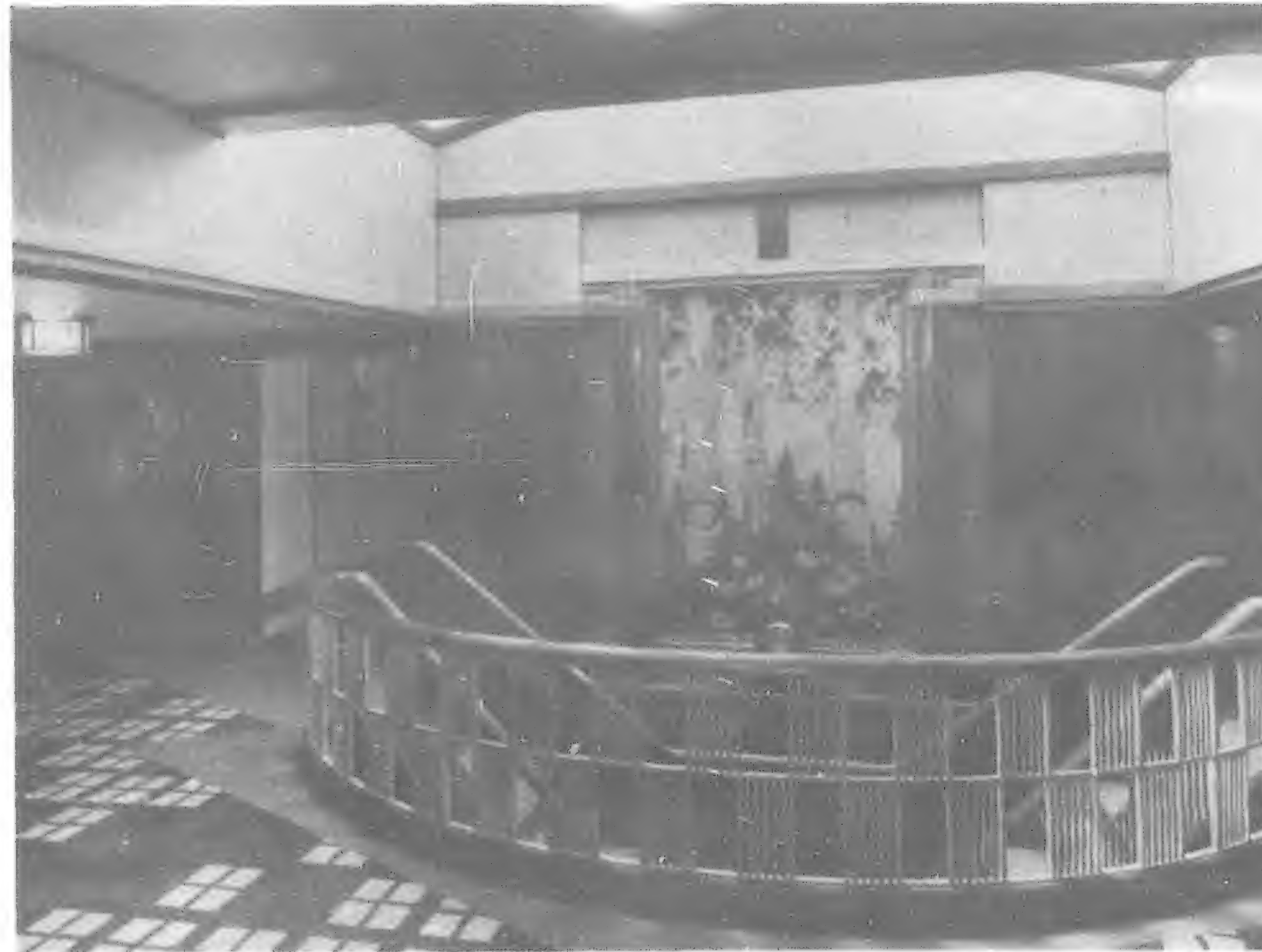
Other spacious decks are allocated as promenades for first and second-class passengers and all are covered with awnings. The upper promenade space is for the exclusive use of first-class passengers and is provided with a closed verandah,



General Arrangement of the Steamer "Ussuri Maru"



First-Class Enclosed Verandah



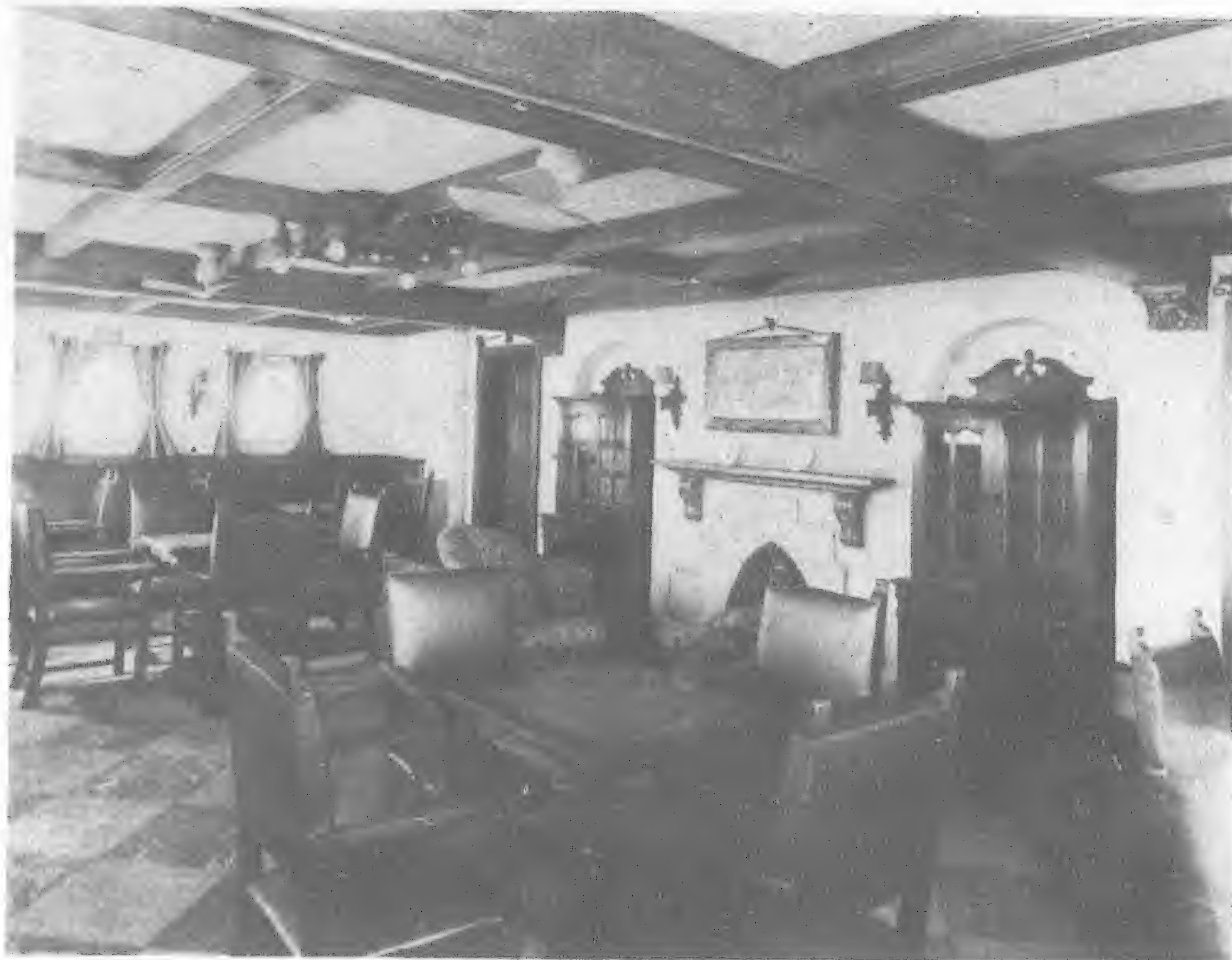
First-Class Entrance on Upper Promenade Deck



First-Class Smoking-Room



Special Bed Room



Second-Class Smoking-Room



Third-Class Shop (Forward)



First-Class Dining Saloon



First-Class Entrance on Lower Promenade Deck

smoking-room, show-room, bar, entrance, staircase, suite room and state rooms. On the lower promenade deck are arranged, for the use of first and second-class passengers, the first-class dining-saloon, entrance hall, staircase, the second-class smoking-room, the second-class verandah, the first and second-class interchangeable cabins, second-class state rooms and first-class accommodation ladder. The upper deck below the promenade deck is mainly for use of second-class passengers. There are located on this deck second-class dining-saloon, cabins, custom officers' room, doctor's room, medical office, chief engineer's and officers' dining-room.

On the upper deck below the forecandle are the sailors' quarters, mess room, lamp room and paint store. At the stern there are the steering engine room, tallymen's room and cargo office. The fore and aft winch platforms serve as third-class entrance and recreation hall. The second and third-class accommodation ladder is arranged amidships on the upper deck. Aft the boat deck are the hospital, assistant surgeon's room and a medical laboratory. The major portion of the second deck is given up for the use of third-class passengers and there are provided a canteen, baths, lavatories, women's wash room, drying room (for passengers' use), barber's shop, engineer's room, stewards' room, foreign galley, Japanese galley, scullery and bakery. On the third deck are the mail room, baggage room, store room and coal bunkers, frozen provision store, frozen cargo spaces and general cargo spaces.

The design of the ship was based on the results of an extensive program of model experiments carried out at the builders' experimental tank and special care and attention was devoted to the design of the shape of the stern, and with a view to eliminate hull resistance to the minimum and obtain high propulsive efficiency a rudder of the double-plate stream-lined type was adopted with excellent results.

Considering the heat emanating from the boiler and engine rooms, a complete heat preventive arrangement has been incorporat-

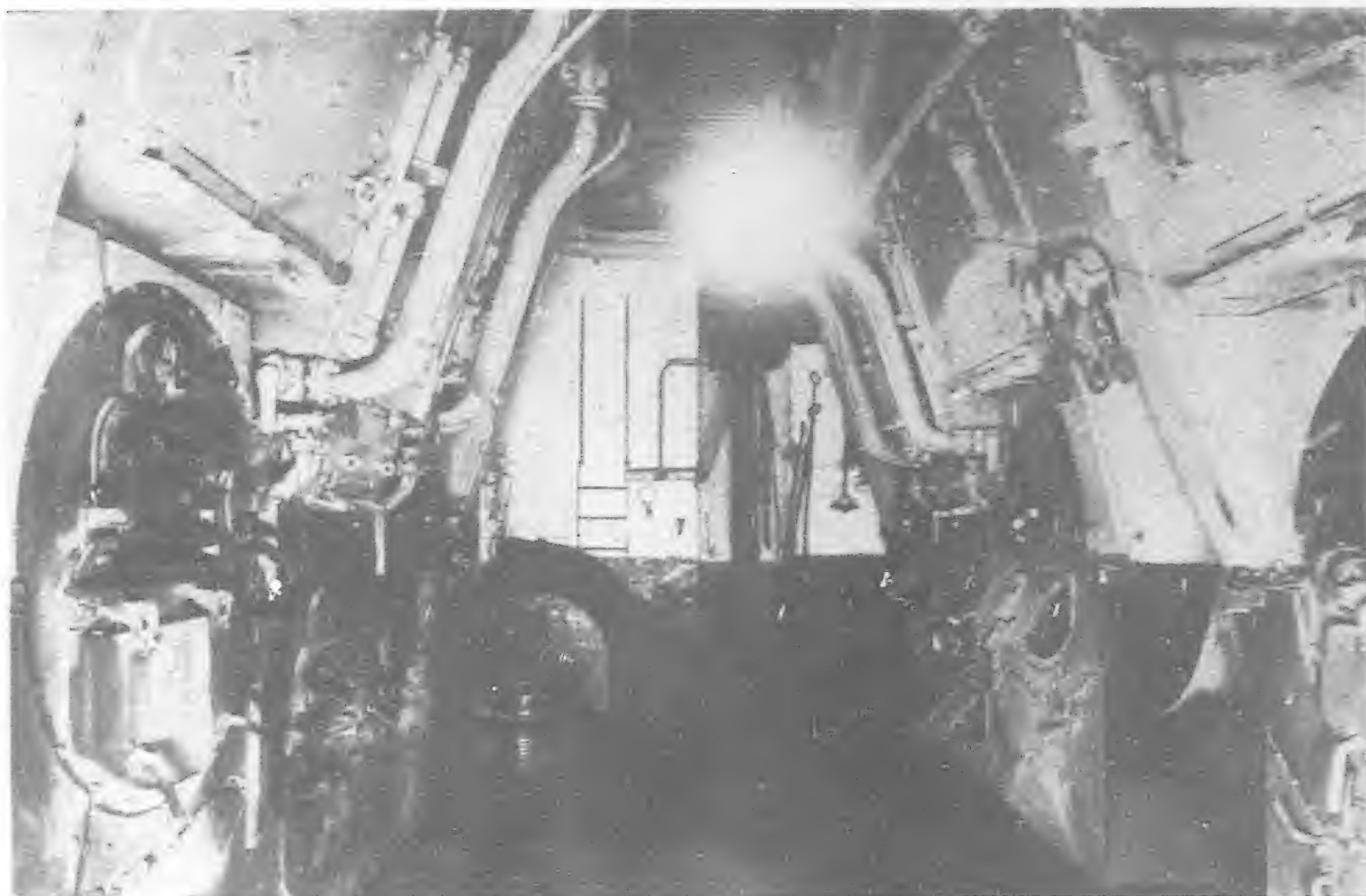
ed, and in order to prevent soot from falling from the funnel on to the decks, a special and novel device has been tried on the upper edge of the funnel with good results.

Special consideration was given to prevent vibration of the hull at high speeds, and an elaborate construction was adopted; accordingly no vibration whatever was experienced even when the ship was running on its high speed trial, not to say at the normal sea speed, and absence of vibration is of such degree that passengers can hardly tell whether the ship is running or not.

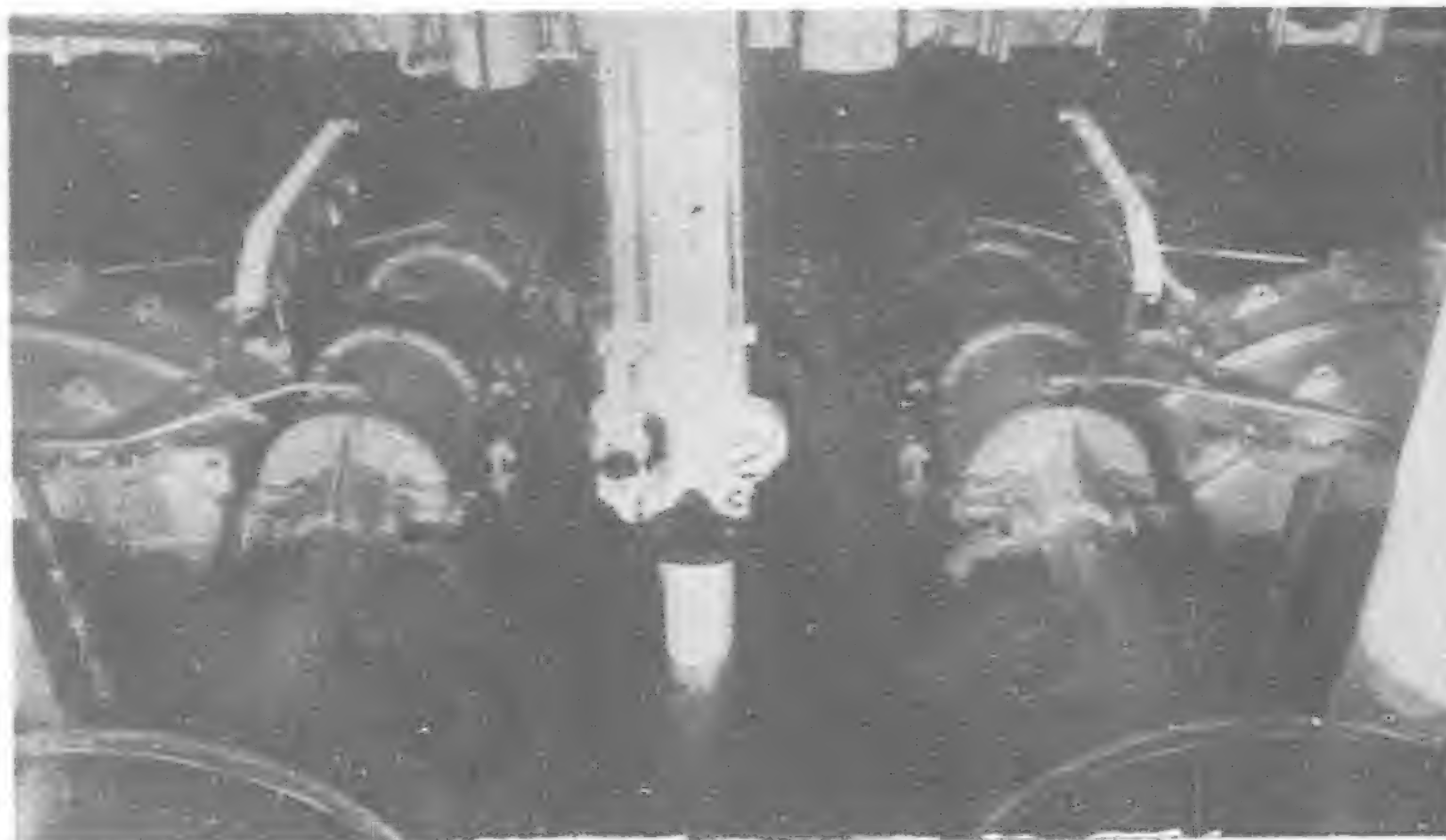
Passenger Accommodation

The general arrangement of the accommodation is on the whole similar to that of the sister ship, the *Ural Maru*. The notable differences in this ship are the introduction of interchangeable first-class and second-class staterooms, an increase in number of third-class accommodations, the decorative arrangement of canteen for third-class passengers and improvement in the ventilation system. For beds in the first-class staterooms high grade home made mattresses with box springs have been adopted, the number of single berth cabins has been increased, and the adoption of rubber flooring in the first and second-class public rooms, and all alleyways are other improvements.

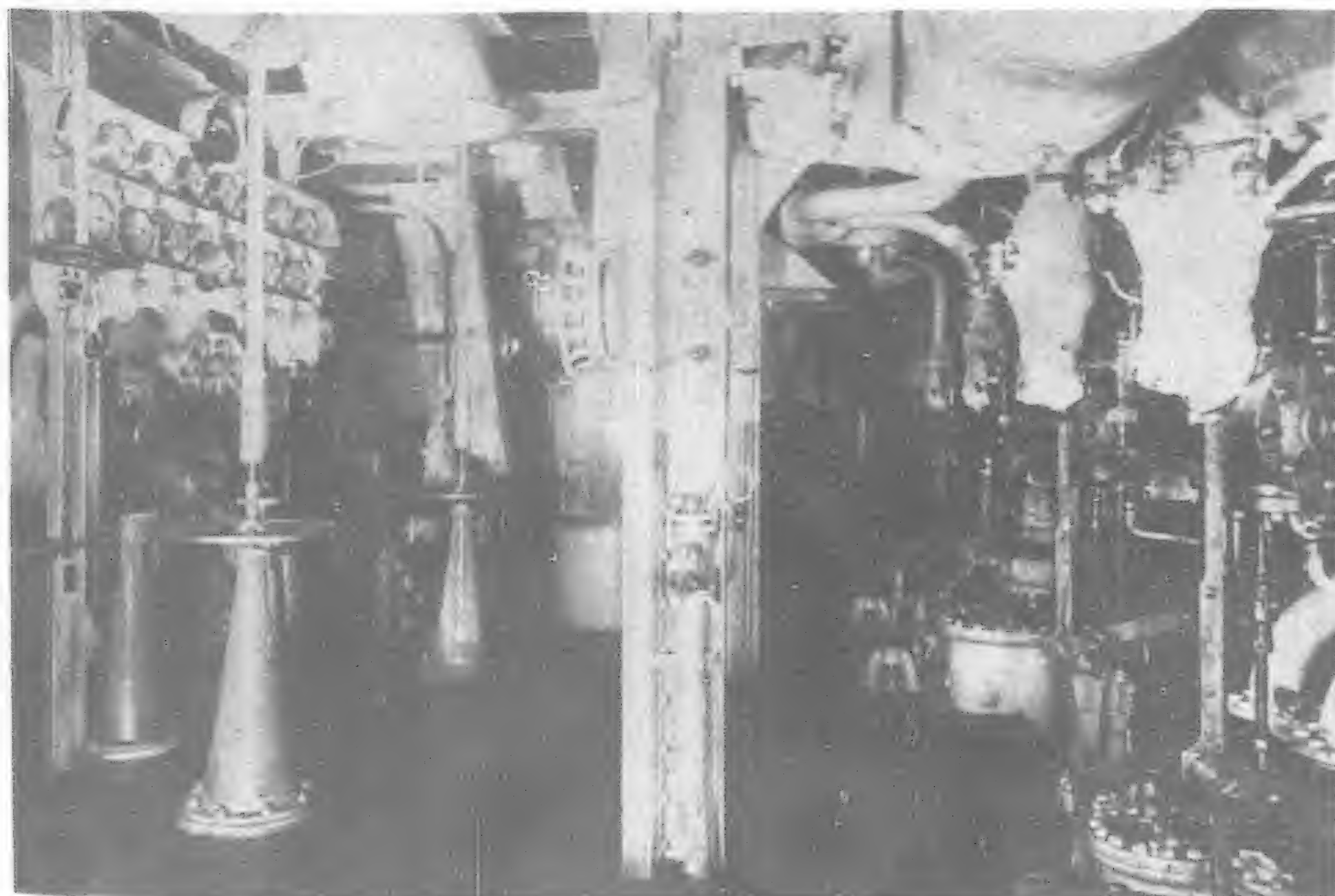
In each first-class cabin, a wash basin with hot and cold fresh water supply is fitted. A number of rooms laid with Japanese mats and family rooms are also provided. Special mention should be made of the suite room situated aft on the upper promenade deck, which consists of a sitting room and bedroom with private bath and toilet attached, also a baggage room locker. This suite is decorated in modern French style, the design and manufacture being carried out by the builders themselves, whereby a light and tasteful aspect is obtained. The materials employed are high grade wood, such as bird's eye maple, fancy grained black wood, horse-chestnut, all polished and richly carved. Mozaic, cloth, and metal fittings of special pattern are used, and the ship well merits the designation of a first-class passenger ship.



Boiler Room



Port and Starboard Engines from Above



Manœuvring Platform, Engine Room

Of the public rooms, the smoking-room, closed verandah, entrance hall, show-room and stairways were designed by Professor Junpei Nakamura of the Yokohama Higher Technical School, and manufactured by the builders of the vessel. In the interior decoration of the ship, endeavour was made to obtain as far as practicable a Japanese effect, and thus a free and bold technique was employed, which the designer himself asserts to be a credit to the ship. As a whole, the scheme is modern, and full consideration has been given to give light and brightness to the room.

The entrance extends to the upper and lower promenade decks, and in the middle of the lower entrance is a grand stairway, the walls of which are panelled with polished fancy wood and ornamented with metal fittings depicting marshes. The latticed ceiling and rubber tiled floor in special Japanese style give an impression of the corridors in a mansion of an old feudal lord, and in the middle of the wall opposite the stairway a large lacquered lantern is placed on a marble stand which adds further to the elegance of the ensemble.

Proceeding to the upper entrance by the winding stairway quite another aspect is presented there from an architectural point of view, modern French style being adopted here in modified Japanese form. On the right and left a bar and show-room are arranged. The entrance to the smoking room portrays a Japanese roofed gate. The wall is of French polished zebrano and fancy-grained chestnut with mandalaibaen cloth. Etched glass is used in the sliding doors of the bar counter, and the inside glass of the skylight in the top ceiling is perhaps the first of its kind to be applied for such work.

The beautiful framed picture hanging on the wall right above the stairway depicts scenery of white birches of the Kamikochi in Shinano province, and on the clock placed on fore space of this picture is engraved a pair of ptarmigan befitting the high mountain scenery depicted in the picture.

The first-class smoking-room is done in a refined style of the Japanese tea house. A hearth, of simple but refined taste, in the center, an alcove befitting the tea house, round windows, writing tables of elaborate design, glass imitation of paper screen windows and hurdle pattern ceiling are all in perfect harmony. In the center ceiling, there is a picture showing wild ducks in flight. Effort was made to depict in modern form a house for the performance of the tea ceremony. A pigeon, a choice work of the famous French sculptor, M. John Martel, reposes on a lacquered stand in the alcove, resembling a Japanese writing stand, and shows up with splendid effect. The floor is covered with rubber flooring of special design to match the room.

The first-class closed verandah is arranged forward of the upper promenade deck around the smoking-room, with frameless windows on three sides manufactured by the builders, from which the changing scenery of the sea can comfortably be seen from cane chairs. All is designed to give the aspect of a Japanese garden, and an "Azumaya," a Japanese bower, is provided around which bushes have been placed. A bell-shaped iron lantern, which was used in feudal days in a post town, stands by the seat of the verandah to give effect to the idea of travel. The green rubber floor is arranged in imitation of stepping stones. All is designed to suit Japanese taste.

The first-class dining-saloon is decorated in ancient Egyptian style, a style which is rarely to be met with. The pillars, ceiling, walls, floors, lighting sets and furniture have been all designed and arranged as a modern conception of a primitive age, that is, all has been treated in the style of 1500—1300 B.C., whereby the pillars and decoration as well as the wall painting are as in the temples of Ammon at Luxor and Seti at Abydos in Egypt, and effort was made to reproduce the vivid color scheme at the time those buildings were constructed.

Besides the aforementioned wall paintings, on the frieze surrounding the room, phases of the life of the people in that period, their religious faith, music, sculpture, architecture, public works and technical arts of that time are represented. They were mostly copied from those kept in the museum at Cairo.

On the capitals of the pillars are compani-form Lotuses which grow on the River Nile, in which indirect illumination is concealed.

The entrance is modelled in the form of a pylon. For the decoration of the window the "winged solar disc" which is a typical ornament of this decoration has been adopted. Sideboard, chairs, tables and the like are also copied from those of that period.

The second-class cabins are all located in the centre of the deck, making a new departure. Furniture and fittings are all of

high grade quality and of special design. Rooms with "tatami" on the floor, accommodating five-seven persons per room, are also provided. The second-class public rooms are all to the design and manufacture of the builders. The dining-saloon is arranged at the foremost part of the upper deck and is decorated in modern German style. Light green walls with reddish curtains give harmony and a feeling of freshness and brightness.

The floor is covered with rubber flooring. The smoking-room is tastefully and sumptuously decorated in Spanish style. The large ceiling beams, plaster walls, stone fireplace, book-case of Spanish style built in an alcove, and various wood carvings and lighting sets are provided, which make the smoking-room and the dining-room not inferior to those of the first-class public rooms. The verandah is reminiscent of ancient Spanish style.

The third-class passenger accommodation occupies almost the whole of the wide space on the 'tween deck. The walls are panelled with polished hard wood. The rooms all have raised floors covered with 'tatami' over which green carpet is spread. Careful provision has been made for ventilators, skylights, electric fans, heating and lighting. In the matter of ventilation, a special device was made through a mechanical duct.

Japanese baths with dressing-room attached are provided and floors are laid with tiles. Lavatories are complete. A hospital is provided for men and women, and the medical office and laboratory are on up-to-date lines. A spacious promenade space on the wide boat deck is ample for deck tennis and other sports, and for walking exercise a large part of the upper and lower promenade decks is available.

Crew's Accommodation

Recent years have witnessed a great improvement in the quarters, mess-rooms and pantry as well as in the sanitary arrangements for the crew. In this vessel, special attention has been paid having regard to their welfare, and the arrangements are such that leave nothing to be desired; in particular notable improvements have been effected in the sanitation, and most parts of the floors are laid with Mitsubishi magnesia deck composition.

Comparison with the Sister Ship "Ural Maru"

Generally in design this vessel has the same characteristics as the sister ship, the *Ural Maru*. Having regard, however, to the actual performance of the sister ship, various improvements and alterations have been incorporated. In addition to the items dealt with in the preceding paragraphs, great progress has been made in the propelling machinery, life saving appliances, fire extinguishing apparatus, ventilation, sanitation, lighting, communication, cooking arrangements, navigation appliances, cargo handling arrangements, mooring, cold storage, electric and other apparatus in this vessel, some of the most noteworthy being as follows:—

As previously mentioned, the vessel's stem is of the round flexible type, and the stern cruiser form. A double-plate streamlined type of rudder has been adopted, and many other improvements incorporated in the form of the ship. These were made possible by the extensive investigations and experiments carried out at the builders' experimental tank, which has resulted in obtaining a great increase in propulsive efficiency, namely, the Admiralty constant at half load trial was 292 against 277 for the *Ural Maru*. Life saving appliances are complete and amply meet the requirements set forth in the International Convention for Safety of Life at Sea, 1929, for short International voyaging, and the following life-boats and davits are provided:—

Life boats :	6—30-ft—0-in. open type.
	2—28-ft.—0-in. " "
	2—24-ft.—0-in. " "
Davits :	6 sets of Welin's quadrant type,
	2 " " Columbus type.
	2 " " ordinary davits with turning gear.

In addition to these, there are provided 24 buoyant pieces of apparatus each for 22 persons, 18 life buoys, and a line-throwing gun.

In regard to ventilation, the mechanical ventilation system has been extended, and two Mitsubishi-Ordinance exhaust fans and 2 inlet fans are fitted with ventilation ducts extending in all directions.

To turn to the sanitary arrangements, there is a fresh water heater, supplied by Messrs. Archibald Low, from which hot water is led to the first and second-class cabins as well as to the wash basins in the first and second-class lavatories. In each of the third-class lavatories a tank is fitted from which hot fresh water is available. The European baths are of high quality double glazed Venetian type fitted with special water heater also supplied by Messrs. Archibald Low. Urinals are of the stall type furnished by the Tokyo Toki Kaisha. Wash basins are all of first-class home make. For third-class passengers, a spacious washing room and drying room are provided.

All the cooking apparatus has been arranged in accordance with the design and requirements of the owners. The European and Japanese galleys, rice boiling compartment, bakery, butchery and scullery are complete in every respect, and the space is much more ample than in the *Ural Maru*.

Specially for Japanese passengers a "Chawanmushi" oven and "Kanteki" (saké warmer) are newly provided. The equipment in this department also includes an electric-driven ice-cream freezer, an automatic egg boiler, and near the third-class galley is an enamelled "Yunomijo."

As to the navigation appliances, the electric revolution indicator was supplied by Siemens & Halske. A clear-view sweep, and a propeller emergency electric lamp signal are newly fitted. An innovation is incorporated in the steering gear which is of the Brown type. This is an arrangement supplementary to the steam tiller, whereby the coupling and rod are led direct from the mooring winch. Other features are the derricks, made of Mannesmann steel tubes, and for the refrigerating plant patent Co2 multi-effect type refrigerating machines were furnished by the builders' Kobe Works.

A point to be proud of in this ship is that, with a view to encourage the use of home-made products, every endeavor has been made to employ as many home-made products as possible, and in no ship have so many been used before. All parts of the hull, steel materials and almost all of the equipment, engines and boilers are of home manufacture.

Machinery Arrangement

As above mentioned, with the exception of a few auxiliaries all the machinery is of home make. The main turbines, main boilers and part of the auxiliary machinery were manufactured in the Nagasaki Works of the builders, while the greater part of the auxiliaries were furnished by the builders' Kobe Works. On the official trials, they showed such wonderful performances as surpassed expectations, the results of some of which are tabulated below.

(a) The main engines consist of 2 sets of Mitsubishi-Zoelly all impulse cross compound type steam turbines, developing an aggregate normal output of 5,000 s.h.p., each set comprising one h.p. and one l.p. ahead turbines with astern turbine incorporated with each ahead turbine, particulars of which are as follows:—

Steam pressure at the turbine throttle. 200 lbs. gauge.
Degree of superheat of steam at the turbine throttle 150° F.
Condenser vacuum. 28 inches.
Output (s.h.p.) 6,500 (overload) 5,000 (normal) 4,190 (astern power).

R.P.M.	Propeller.	120	100	92
	H.P. turbine.	5,450	5,000	4,190
	L.P. „	3,930	3,600	3,010

Construction and sizes of the turbines and reduction gears:—

H.P. ahead turbines	6—single row impulse stages.	Mean dia. 600 m.m.
H.P. astern „	1—two row „ stage „ „ „	
L.P. ahead „	5—single row „ stages „ „ „	920
L.P. astern „	1—two row „ stage „ „ „	

First reduction gear.	Pitch circle dia. (in inch)	R.P.M.
High pressure pinion.	6.3	5000
Low pressure pinion.	8.75	3600
Main wheel.	54.1	582
Second reduction gear.		
Pinion.	17.0	582
Main wheel.	90.0	110

With the single reduction gear that has been used in the past, it has been difficult, owing to the limited space of the engine room, to have an arrangement whereby a sufficient efficiency could be obtained by having the turbines run at high speeds in such a ship as this, where the propeller revolutions are comparatively low. By the adoption of the Mitsubishi double reduction system it has become possible to have the turbines run at adequate high speeds, and to suit such a high revolution, the builders have had the high pressure rotor machined out from a single forging, while the low pressure turbine has a rotor of special built-up type.

The Mitsubishi double reduction gear system possesses also such a special feature as to eliminate as far as possible the undue shocks and impulses due to the torsional vibrations of the shafting, so that the high speed of the turbine can be slowed down to a low revolution of the propeller with higher degree of safety in comparison with the ordinary gear system.

(b) Condensing plant:

Two main condensers. These are of the Contraflo under-slung type, having a total cooling surface of 520 sq.m. The material for the tubes is a 30 per cent cupro nickel which is highly spoken of as an anti-corrosive metal, and is now being used in high class vessels instead of brass which, as is well known, has been universally used in the past, and was also employed in the *Ural Maru*.

Two circulating pumps of the centrifugal type, each driven by a steam engine, having a capacity of 1,350 tons per hour.

Two air pumps of Weir Paragon type, each having a capacity of 42,000 lbs. per hour.

One auxiliary condenser of the Contraflo non-vacuum type.

(c) Feed water system.

Two feed pumps of the Weir direct-acting type with a capacity of 40 tons per hour, one set acting as a standby.

One feed water heater of the Contraflo surface type.

One feed water filter.

(d) Lubricating oil system.

Two lubricating oil pumps of the Weir direct-acting type, with a capacity of 19,600 gallons per hour. Of these two sets, one is a standby.

Three lubricating oil coolers.

One electrically-driven lubricating oil purifier of the "Baltic" type.

(e) Main boilers:

Five single-ended Scotch marine boilers, 15-ft.—0-in. dia. by 12-ft.—0-in. length, with a working pressure of 225 lbs. per sq. inch, and a degree of superheat of 150° F. A feature worthy of note in the boilers is that in the construction of the air heater, both the tube and plate types are employed together. This is an improvement over those installed in the *Ural Maru*. By this form of construction, an increase of approximately 40 per cent in the heating surface and about 10 degrees in the temperature has been gained for the same capacity.

(f) Auxiliaries for main boilers:

Two Howden's forced draught fans, each of a diameter of 63 inches, driven by a steam engine.

One ash ejector pump of the "Iceberg" direct-acting type, capable of delivering 87 tons per hour.

Two ash ejectors.

(g) Miscellaneous machinery:

One general service pump of the "Iceberg" direct-acting type, having a capacity of 100 tons/hour.

One ballast pump of the "Iceberg" direct-acting type, having a capacity of 125 tons/hour.

One sanitary pump of the "Iceberg" direct-acting type with a capacity of 125 tons/hour.

One bilge pump of the Worthington direct-acting type, with a capacity of 50 tons/hour.

One fresh water pump of the Worthington direct-acting type having a capacity of 20 tons/hour.

(h) Generating plant:

Three sets of generators driven by a compound steam engine, each of 25 kw., 110-volts D.C. marine type, are installed.

(i) Funnel and ventilators:

Improvements in the funnel and the ventilators are among those which have been incorporated in this ship when compared with the *Ural Maru*.

(Continued on page 439)

Design of the "No. 1 Motor Life-boat" of Imperial Japanese Life-boat Institute

By Constructor Commander, Viscount T. TOKUGAWA, I.J.N., Kogakuhakusi and Engineer-Lieutenant-Commander M. HANADA, I.J.N., Kogakusi

(Specially prepared by Construction Lieutenant-Commander Y. Tajo, I.J.N., (Reserve), Kagakusi, M.I.N.A., M.I.M.E.)

JAPAN, as an island empire, resembles Great Britain and Ireland in many respects, and the future of both empires depends upon the prosperity of the shipping trade. The increase of Japanese and foreign tonnage entering and leaving Japanese ports has naturally augmented the number of sea accidents and casualties off Japanese coasts. It is very important to minimize and if possible to avert lamentable losses of human lives and valuable goods and for that special steps should be taken by the government or very generous assistance should be rendered to the Imperial Japanese Life-boat Institute.

It is an undeniable fact that Great Britain is the pioneer of the world's shipping and shipbuilding, and still possesses the largest tonnage in the world. Japan has been pitifully handicapped by the past harmful isolation policy of the Tokugawa Dynasty for nearly three centuries, yet she is now ranked among the world's leading shipping countries, next to Great Britain and America, owning over 4,320,000 gross tons of mercantile marine. It is regrettable, however, that the percentage of ship losses against the number of ships possessed is so high as to be three times that of Great Britain. This is due to the existence of a considerable number of old ships in Japan and those crudely built during the Great War. The Imperial Government has now appointed a committee for the prevention and investigation of disasters at sea in order to establish a special plan for minimizing such disasters. The recent figures for entrances and clearances of ships in Japanese ports are about the same as those of Great Britain and Ireland, i.e. both about 58,000,000 tons in 1930, which emphasizes the necessity for the expansion and improvement of equipment for rescues at sea near Japanese coasts.

The Royal National Life-boat Institution was established in 1824 and owns now over 90 efficient motor life-boats with every necessary

equipment for the purpose. The Imperial Japanese Life-boat Institute was established as far back as 1889, but its equipment is far inferior to that of the former and has only 30 motor life-boats of launch types which cannot compare with the former's properly designed life-boats in seaworthiness and wave-resisting properties. Notwithstanding these facts, the work done by this institute well matches that of the R.N.L.I. This has been done, however, only at the sacrifice and the risk of lives of men engaged in this noble and gallant task combined with the enthusiastic efforts of the staff. It being unreasonable to carry on this benevolent work with such sacrifices due to financial deficiency, the institute has decided to build a number of proper motor life-boats in order

to minimize the sacrifices made in this noble work.

General Design of the First Fifteen-Meter Motor Life-boat

The Imperial Japanese Life-boat Institute being subsidized for a certain period by the Ministry of Communications, the new life-boats to be built should be in compliance with the Ministry's regulations for gross tonnage, speed and brake horse-power, in which they are specified to be not less than 10 tons, 10 knots and 60 b.h.p., respectively. Other marine laws prescribe that steam vessels smaller than 20 tons gross are not subject to survey and are not required to employ certificated mariners. In ordinary times, it being not necessary to have a regular complement for motor life-boats, a common watchman and mechanic in charge will handle the boat in case of emergency with the aid of firemen, fishermen, workmen, etc., on shore, who can be readily called. Therefore, it is necessary to design life-boats which satisfy the above conditions of not less than 10 tons gross and not more than 20 gross tons, and of not less than 60 b.h.p. in the engine output with a speed of not

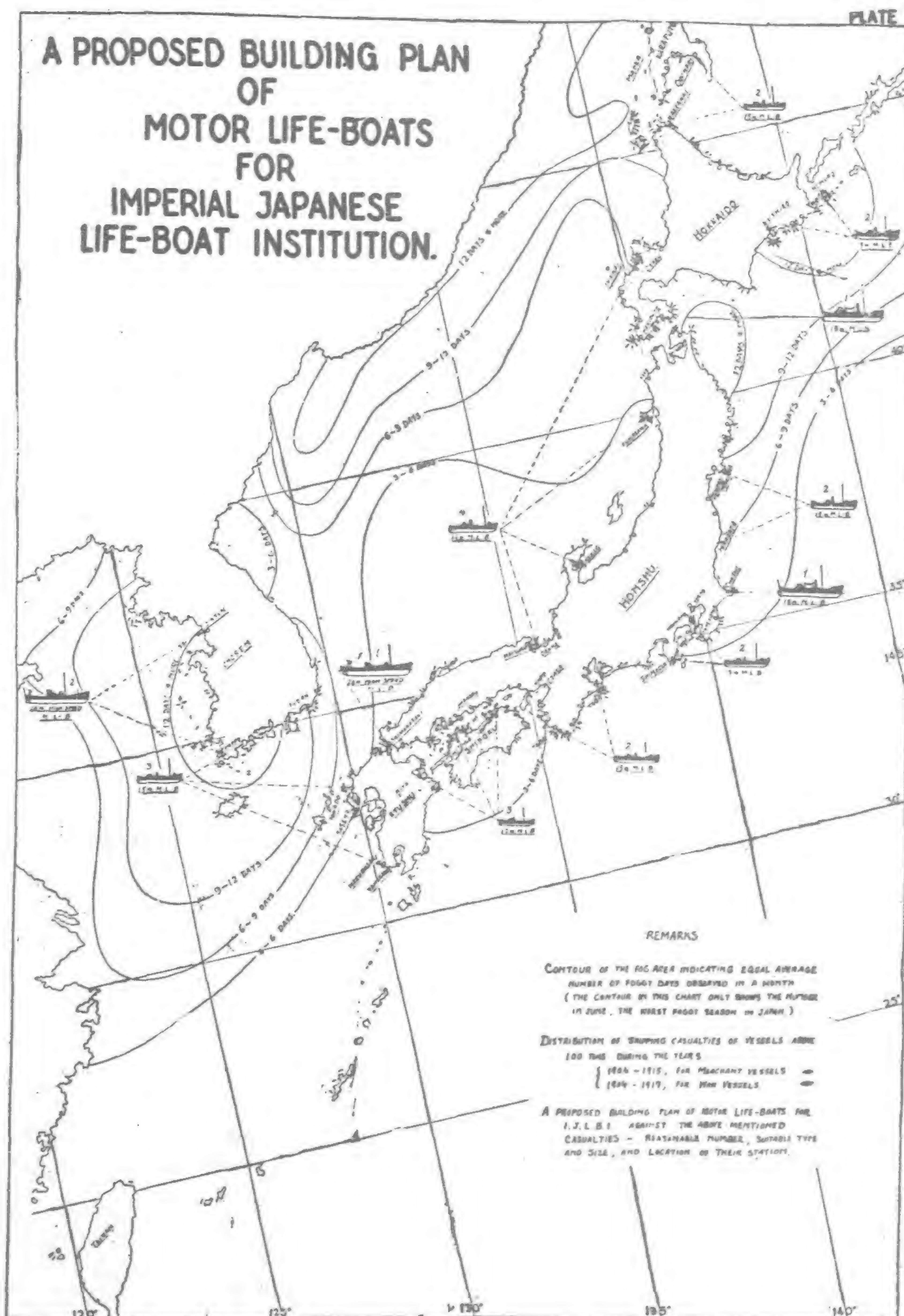
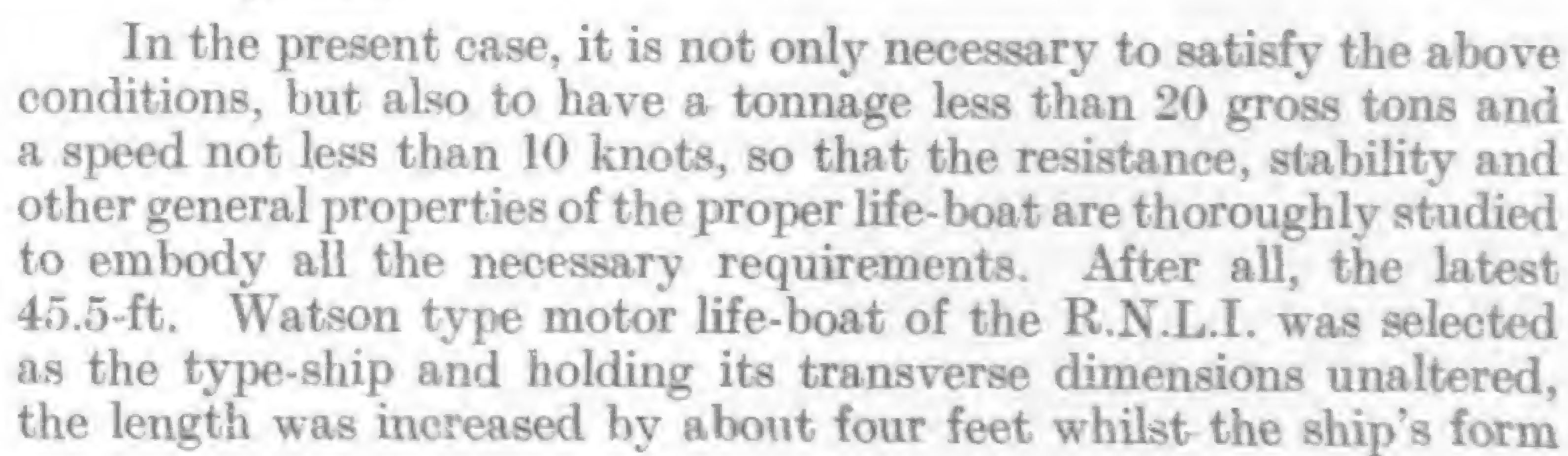


PLATE 4.



15m. TWIN SCREW CABIN MOTOR LIFE-BOAT FOR I.J.L.B.I.
SECTIONS (AS FITTED)

PLATE 5. (3) Weight Distribution:

	Light Met. Tons	Normal (on trial) M. Tons	Full Load M. Tons
Hull	11.00	11.00	11.00
Fittings	1.70	1.70	1.70
Equipment, permanent	1.00	1.00	1.00
Equipment, temporary	—	0.50	1.00
Men and effects. ..	—	0.50	0.50
		(8 men)	
People rescued or others	—	—	7.50
		(150 men)	
Machinery	3.20	3.20	3.40
Fuel	—	0.20	0.30
Electric installation	0.50	0.50	0.50
Miscellaneous	—	0.30	0.30
Total (Displacement) ..	17.40	19.90	27.20

Ship's Form, Resistance, Propulsion
and Stability

(1) *Form and Resistance.*—Wooden models, two feet long, of five typical motor life-boats of the R.N.L.I. and the H.R.M. were specially prepared and tested in the author's (Viscount Tokugawa's) private experimental tank, the results being given in Plates 11 and 12. From these results, the length of the designing

boat was selected as 15 meters and the lines fixed as shown in Plate 6. For two-feet. model of this boat, careful towing experiments were carried out from which the anticipated speed of 10 knots was ensured. The resistance characteristics of these life-boats were carefully analyzed. Types of the life-boats may be classified as (1) Watson type 45.5-ft. life-boat and Kanagawa Prefecture's 45-ft. life-boat, (2) Barnett type 60-ft. life-boat and Dutch 62-ft. life-boat, (3) the I.J.L. I's, 15-meter life-boat and (4) 64-ft. high speed life-boat. The two boats in the groups (1) as well as (2) have individually similar characteristics and also both the groups have a great similarity, so that these curves may be considered to show the resistance characteristics of proper life-boats.

In the present case, it having been required to secure a speed of 10 knots in order to get the subsidy of the Government yet without a great sacrifice for E.H.P., a longer length or a finer shape has been compulsively selected to shift bodily the curve of power constants toward the right-hand side. The 64-ft. high-speed boat of Group (4) is the complete example. In this boat, a length of

(1). *Principal Particulars:*

Length over-all,	meters.	15.000
Length on L.W.L. at normal condition, m.		14.573
Breadth extreme, m.		3.808
Breadth on L.W.L., m.		3.742
Depth amidships, m.		1.895
Draught, m.	{ Fore.	1.000
	{ Aft.	1.000
	{ Mean.	1.000
Normal displacement, metric tons.		19.900
Gross tonnage, tons.		17.600
B.H.P. of main engines (2 x 60 b.h.p. watertight Diesels)		120
Revolutions per minute.		1,200
Speed, knots.		10
Cruising radius, sea miles, { at 10 knots.		110
	{ " 8 "	300

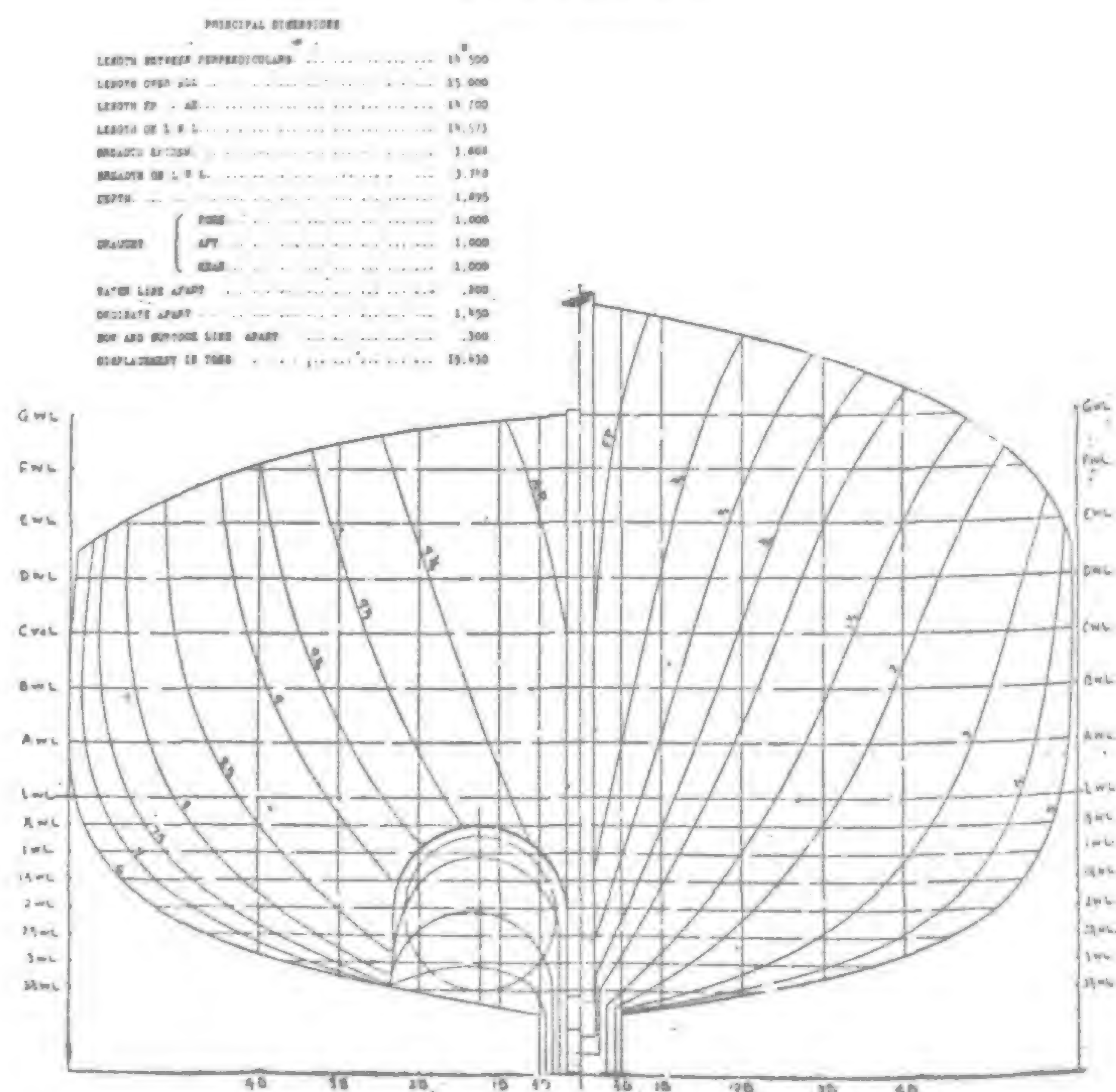
Propellers.

Diameter, mm.		560
Pitch, mm.		340
Pitch ratio.		.607
Area, in sq. cm.	{ Disc,	2,463
	{ Developed,	1,280
	{ Projected,	1,206
Area Ratio,	{ D.A./Disc.	.52
	{ P.A./Disc.	.49
Diam. of boss, mm.		100
Diam. of boss/Diam. of propeller.		.179

(2). *Stability Characteristics:*

(Calculated at normal displacement without appendages, 19.430 tons).		
Position of C.B. abaft No. 11 station meters		.091
Position of C.B. below L.W.L., m.		.325
C.G. above L.W.L., m.		.100
K.G., m.		1.100
T.G.M., m.		1.130
L.G.M., m.		19.600

PLATE 6—BODY PLAN OF 15m. MOTOR LIFE-BOAT
FOR I.J.L.B.I.



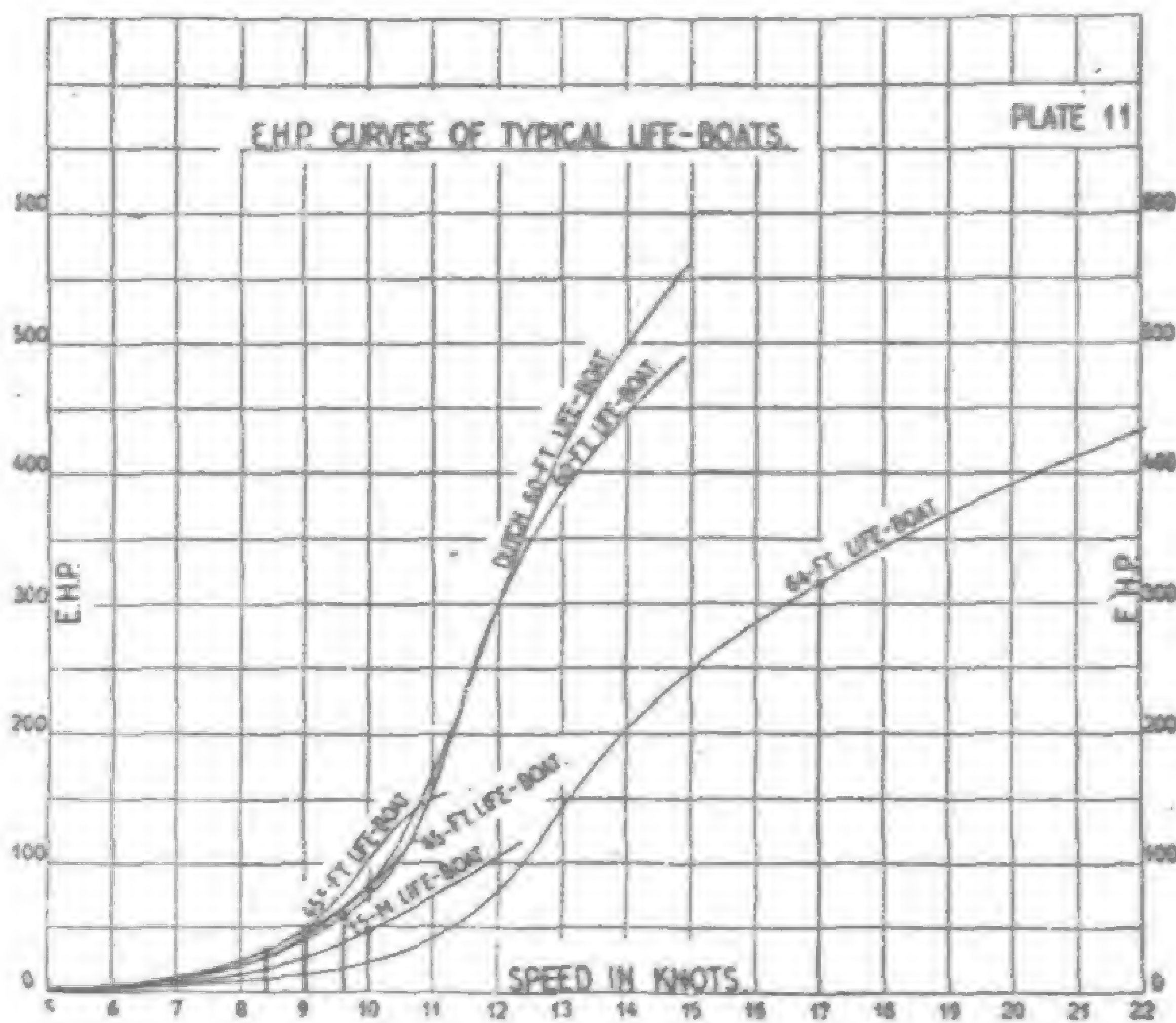
64-ft. was not enough to shift the curve bodily toward the right-hand side in order to get a proper power constant for the life-boat at the designed speed, so that the power of the engines was increased to as high a value as 325 b.h.p. per shaft, necessarily with a fine ship's form and it is reported that even in view of stability the vessel is inferior to the proper life-boat.

The present design for the motor life-boat of the I.J.L.I. being of an improved Watson type with a larger length with the results of tank tests, it will be seen that the power constant increased from the type ship at the design speed, as the result of shifting the curve bodily toward the right-hand side, and it confirms the properties of the ordinary life-boat. Consequently, it was possible to fix the required power to such a moderate value as 60 b.h.p.x 2.

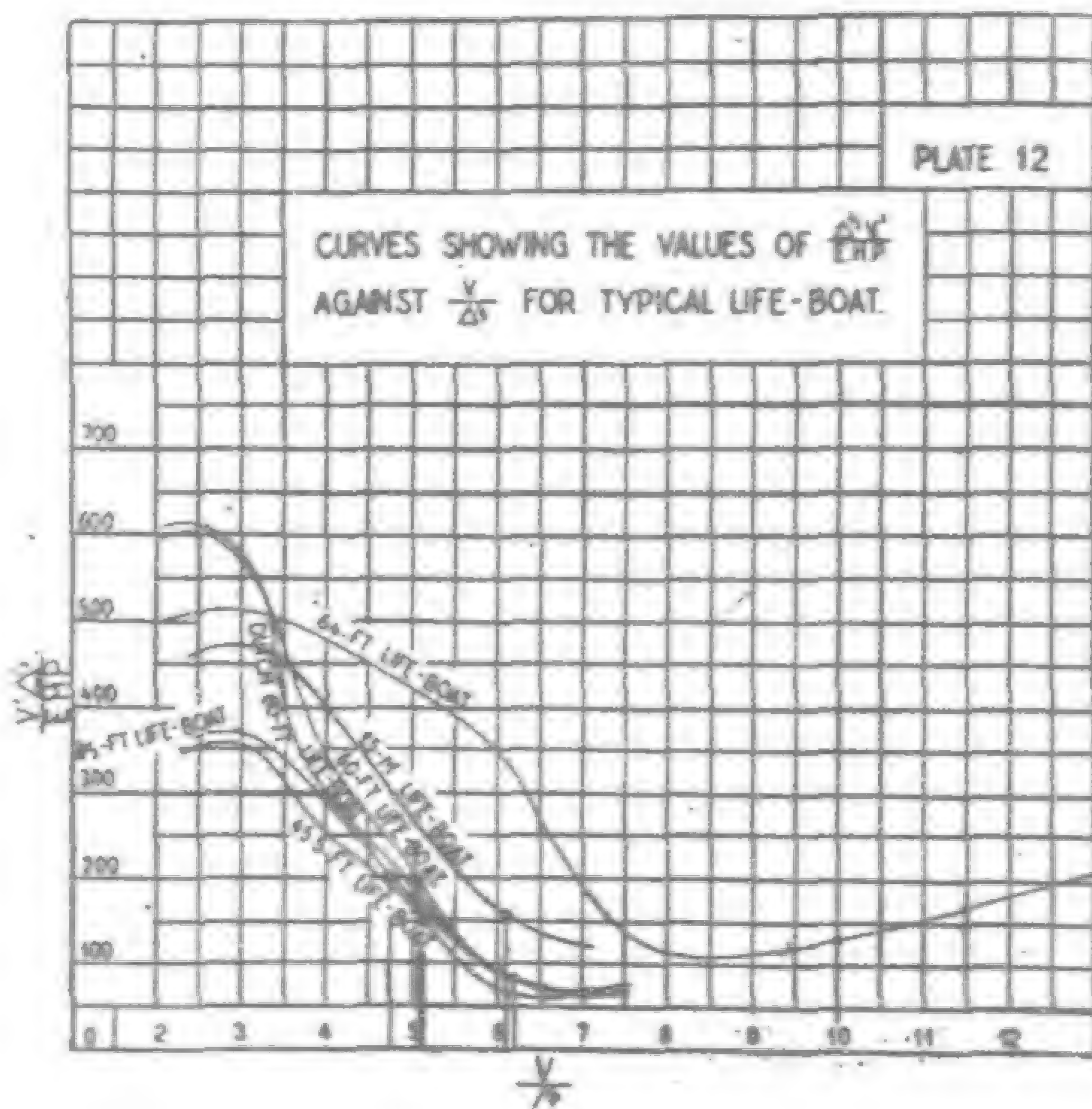
(2) *Propellers.*—In the 45.5-ft. Watson type life-boat, propellers have a diam. 22-in. and a pitch 28-in., while r.p.m. is geared down to 633 from 1,200 r.p.m. at the engine. This is advantageous in case that the propellers can be selected sufficiently large, but when the diameter is so limited as to be not larger than 22-in. in order to be accommodated in a tunnel of 25-in. diameter, the slip would become considerably large, probably with a sharp efficiency curve with a sudden drop of efficiency at a slight difference of slip by any external cause.

In the present case, the diameter being limited to 22-in. from the size of the tunnel, the original r.p.m. of the engine is held and the pitch is decreased from the ordinary value to 13.4-in. and pitch ratio to 0.607, but aero-foil blade section being adopted, the true efficiency reaches 0.473 which saved the efficiency loss due to gearing down the engines, and the propulsive efficiency would be considerably higher than that of the type ship. In this design, the writers are indebted to Engineer Lieut.-Comdr. Y. Amari, I.J.N.

(3). *Stability.*—As explained already, the length of the ship being increased by about 4-ft. from the 45.5-ft. Watson type in accordance with increase of speed and the displacement being increased by about two tons, the deck sheer is also increased with a freeboard of about 1-ft. higher. The range of stability being about 115 degrees as shown in the curves (Plate 13), it is not much different from that of the type ship, but the center of gravity of the hull and fittings is elevated owing to the increase of free-board, so that K.G. of the type ship 2.96-ft. has become 3.609 in this vessel despite a larger B.M., and in consequence the original GM is decreased to 3.71-ft. from 4.35-ft., i.e. a reduction of 14.7 per cent. The displacement being, however, larger in the new ship, the reduction of dynamical stability is only 7.65 per cent which may be considered negligible, as the original GM has been abnormally large in comparison with other types of vessels.



boat design, the local conditions of coasts where the boats are to be launched were taken into consideration together with the constructional possibility, and it was finally decided to have only a large initial stability and range with ample reserve buoyancy, so that the boat is practically unsinkable but not self-righting.

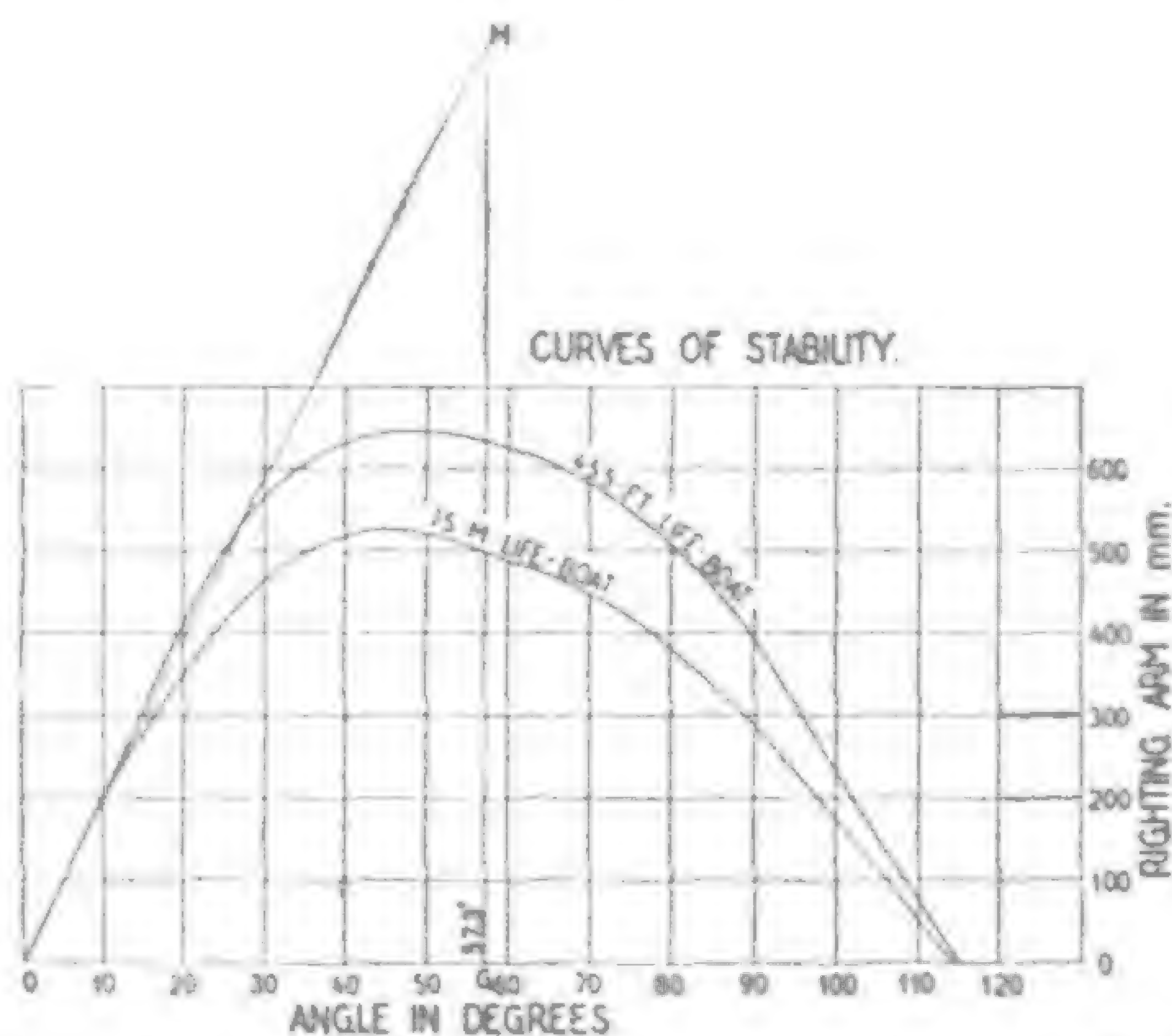


General Arrangement, Hull Construction and Fittings

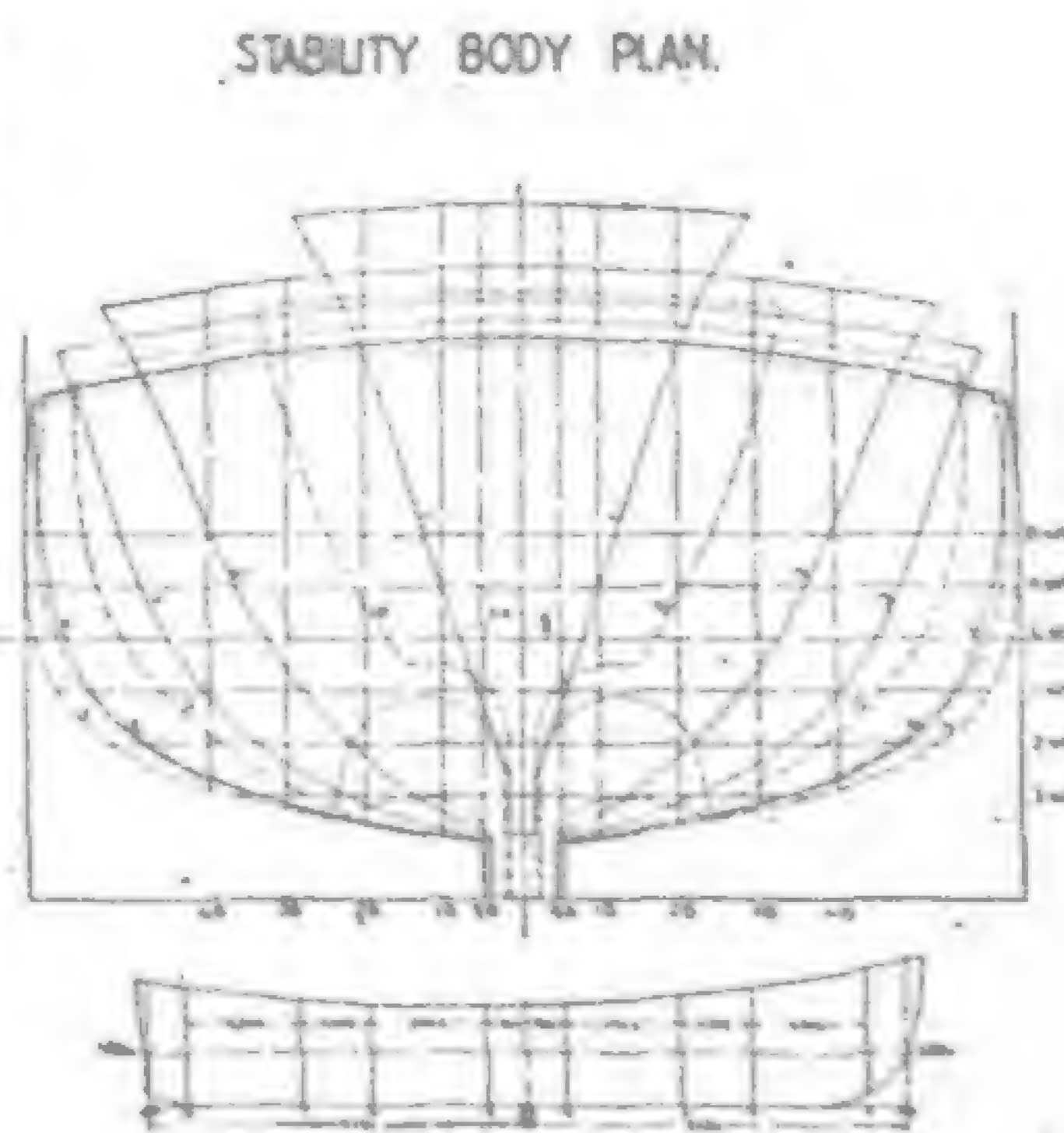
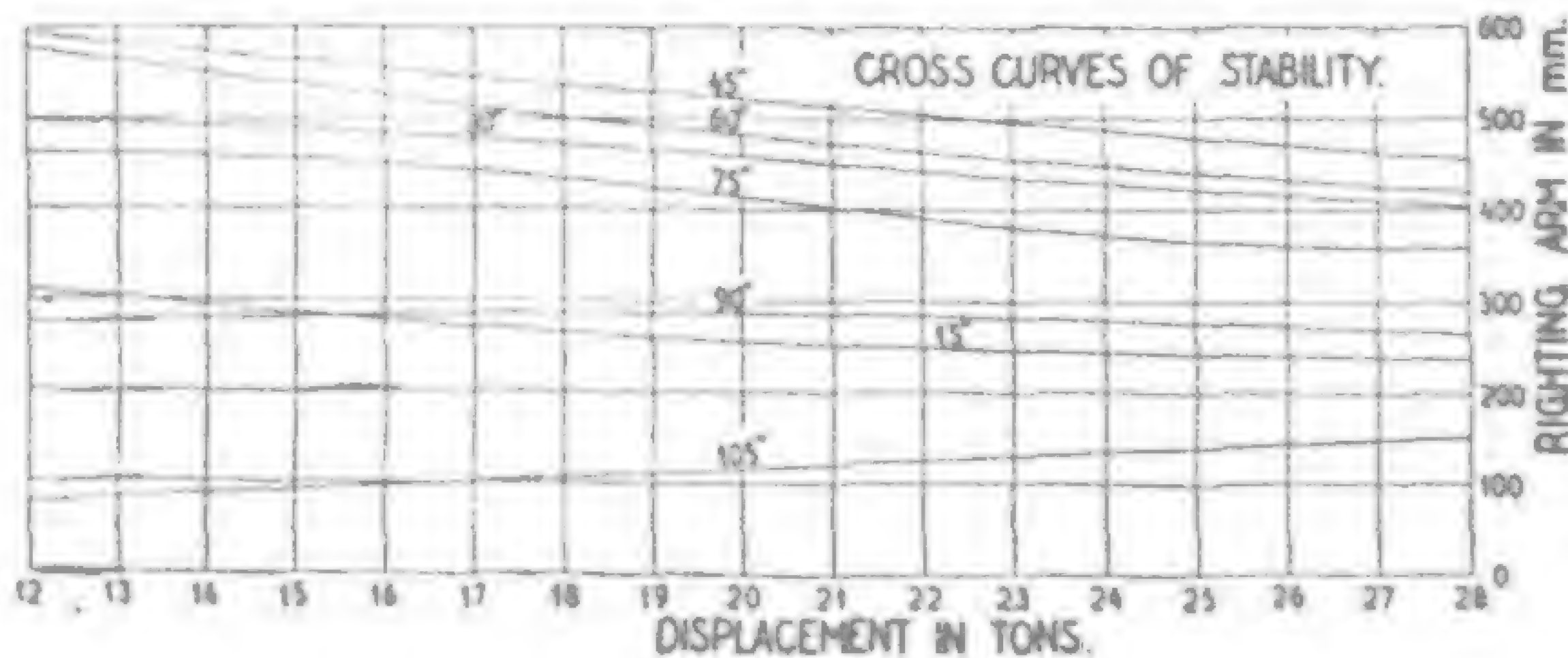
Rigging plan, profile, deck and hold plans, midship section and other sections are shown in Plates 3, 4 and 5, so that a brief description is given herewith.

The vessel is well subdivided by six transverse and four longitudinal watertight bulkheads, whilst the fore and aft parts are utilized as large air chambers filled with air cases. Further, all spare spaces being occupied by air cases, the vessel is not only unsinkable but will not cause any serious trim or heel even when all compartments are flooded. The total number of air cases in this boat is 153 and the space occupied measures 17.5 cub. m., that is about 35 per cent of the total internal space of the boat. A comparison of this boat and an ordinary motor launch at non-intact conditions is given in Plate 14. The authors consider that in view of operating in shallow and rocky coasts, wooden construction is most suitable for the life-boat instead of steel construction, as damages can be easily repaired in any fishing village beside sparing the difficulty of working with thin steel plate joints and the trouble of corrosion of steel life-boats, which may be considered suitable only on sandy beaches, as in the case of the Dutch 62-ft. life boat *Insulinde*.

Materials for the hull construction are well selected Japanese wood. The outside planks and inside of the boat are painted white, while upper structures are in yellow and the bottom as well as easily soiled parts are painted dark brown. Deck fittings are of brass, gun-metal or galvanized iron in accordance with usage.



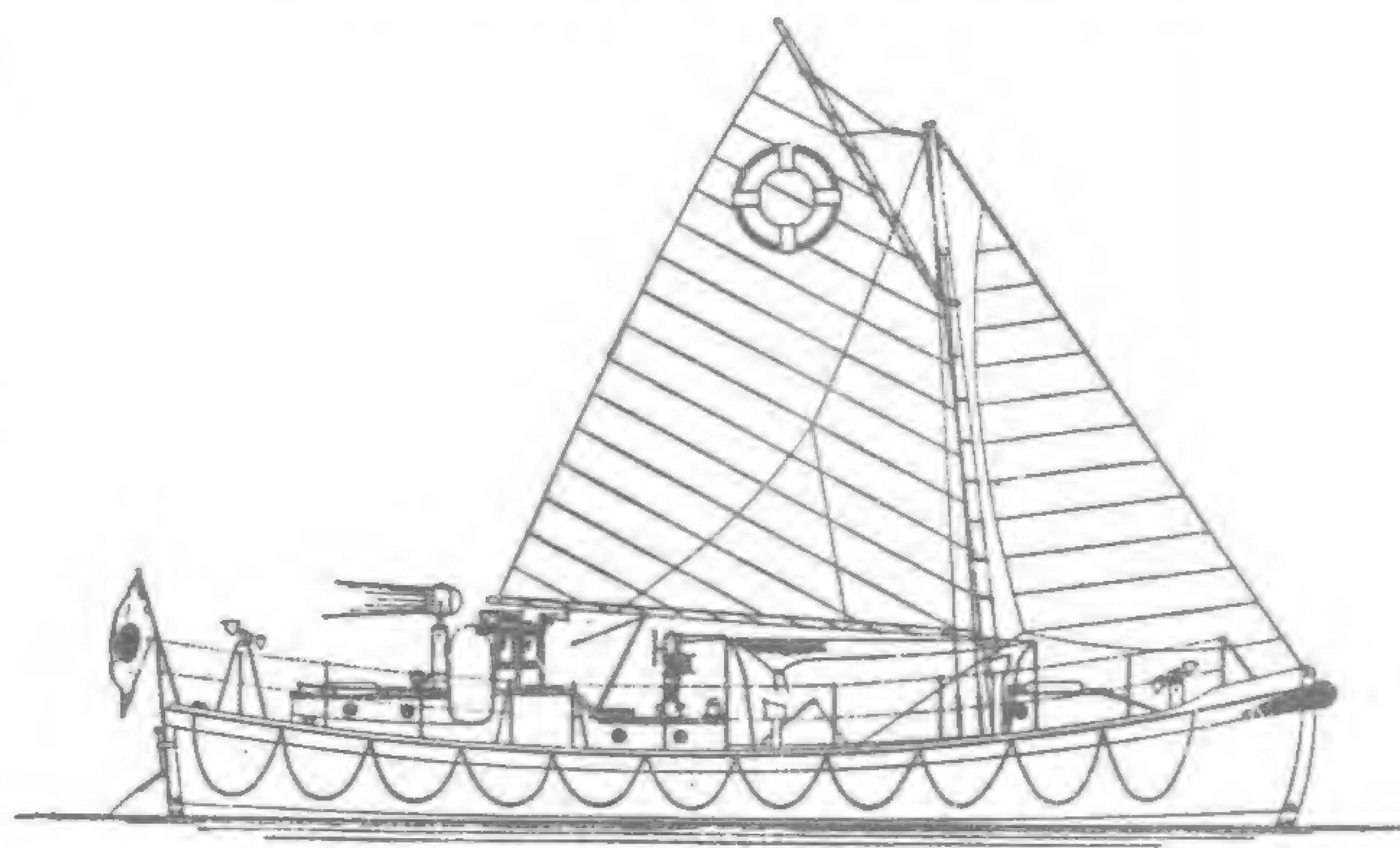
STABILITY CURVES OF 15-M. MOTOR LIFE-BOAT FOR I.J.L.I.



Special fittings and equipment are as follows:—

1. A jumping net of 4-meters by 3-meters as used for high land buildings.
2. Life-lines at sides of the boat.
3. Line-throwing guns and cable cars for rescue of lives from inapproachable ships.
4. A searchlight for night work.
5. Wave subduing apparatus which discharges oil upon waves from openings at bow, oil being drawn from an oil tank through a hand pump.
6. Medical appliances for first aid.
7. A wireless telegraphy set.
8. Arrangement for towing wrecked ship's life-boats and also for harbor work.
9. A fire and bilge pump with a capacity of 30 kgs. per min. driven by the starboard main engine for fire extinguishing, intermediate supply of water from one ship to another, bilge pumping of other ships and for self-discharging of bilge water.
10. Hand pumps and automatic non-return valves for discharging overboard own bilge water.
11. A capstan with a hauling capacity of one ton at 10 meters per min., driven by the port side main engine.
12. Simple manoeuvring devices of the engines and ship by a single helmsman in the wheel-house.
13. Special ventilating appliances with a powerful electric fan and air pipes with automatic valves for the fore and aft parts of the boat.

SAILING PLAN OF 15M. MOTOR LIFE-BOAT FOR I.J.L.B.I.



England, Messrs. Weyburn Engineering Co., Ltd., of Elstead, Surrey, have developed completely submersible engines of 40 b.h.p. which are installed in the motor life-boat *New Brighton* of the R.N.L.I., but these are only gasoline engines. In Germany, Deutschen Gesellschaft zur Rettung Schiffbrüchiger started to dieselize their new life-boats since the last year, yet the engines are not completely submersible.

The duties imposed upon life-boats necessitate operation in very rough weather, in which every compartment should generally be closed up in order

to prevent the entry of sea water and it consequently causes insufficient ventilation. In the case of gasoline engine installation, the danger of the explosion of gas produced by the leakage of petrol is considerable unless extremely good ventilation is effected. Diesel engine installations are not only completely free of such danger, but also have many superior features, such as no necessity for electric ignition, great economy in fuel cost, no carburettors and consequently less liable to the stoppage of propellers due to the heavy pitching on rough seas, etc. Notwithstanding such well-known advantages, Diesel engines have not been hitherto adopted to this class of vessel owing to the heavy weight, but the recent development in high-speed light-weight Diesels has rendered the adoption to the motor life-boat successful.

Although the compartments of life-boats should be closed up in rough weather, yet it is impossible to keep them absolutely confined, as the entrance and exit to and from the boat are necessary as soon as the rescue work begins. Further, there are chances of incoming waves and of flooding inside due to damage in the hull. Therefore, it is most desirable to have the engines themselves totally enclosed in order to enable them to run continuously even in a submerged condition. Messrs. Ikegai Iron Works, Ltd., having some time ago completed a standard type of high-speed Diesel engine of 60 b.h.p. at 1,200 r.p.m. with successful trial results, the Imperial Life-boat Institute advised them to introduce a totally enclosed type which will be adopted to their newly designed fifteen meter motor life-boats. Thus, the completely submersible life-boat engines as shown in Plates 15 and 16 have been successfully turned out by the builders.

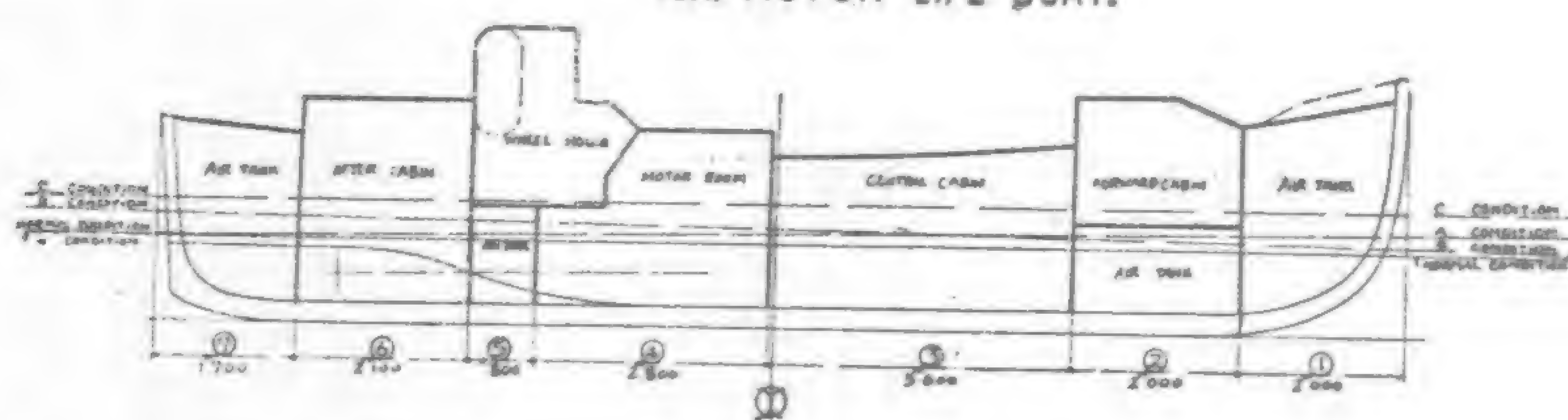
(2) *Outline of Design.*—General requirements of the I.J.L.I. for the design of the engines were as follows:—

1. Two sets of 60 b.h.p. Diesel engines to be built for the twin screw propulsion.

Design, Construction and Trials of New Watertight Main Diesel Engines

(1) *Origin of Design.*—The engines have extremely interesting features designed and built by Messrs. Ikegai Iron Works, Ltd., of Tokyo, in accordance with the requirements and advice of the Imperial Japanese Life-boat Institute. These are possibly the first totally enclosed watertight high speed Diesel engines in the world. A Deutz engine with total enclosure of working parts as illustrated in "High Speed Diesels for Motorboat Drive" by Mr. Oliver F. Allen in *Motorship* March, 1932, may probably be a contemporary design, although no details were given therein. In

15M. MOTOR LIFE-BOAT.



15M. ORDINARY MOTOR LAUNCH.

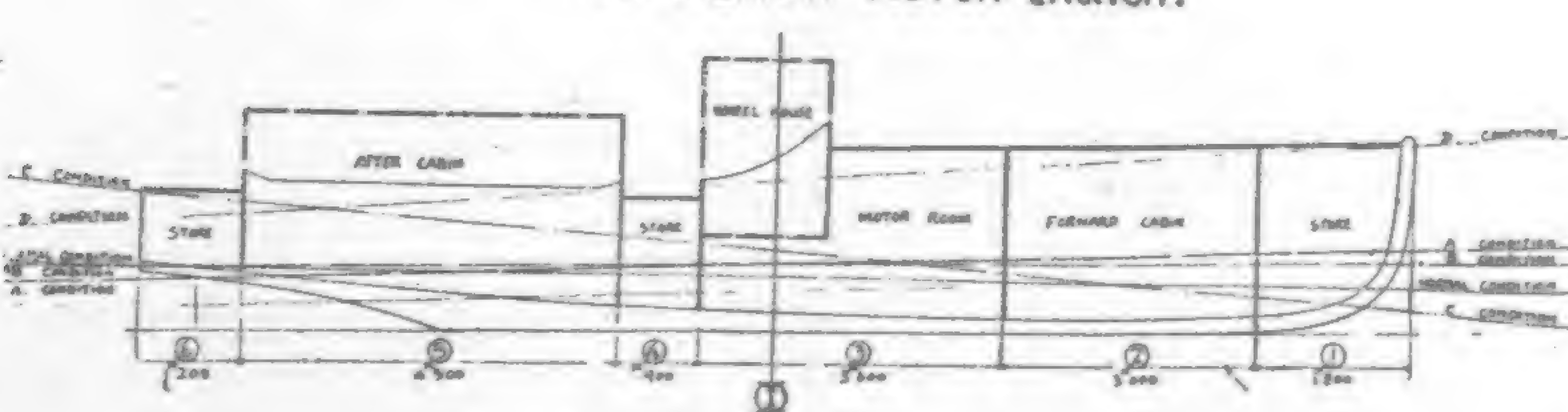
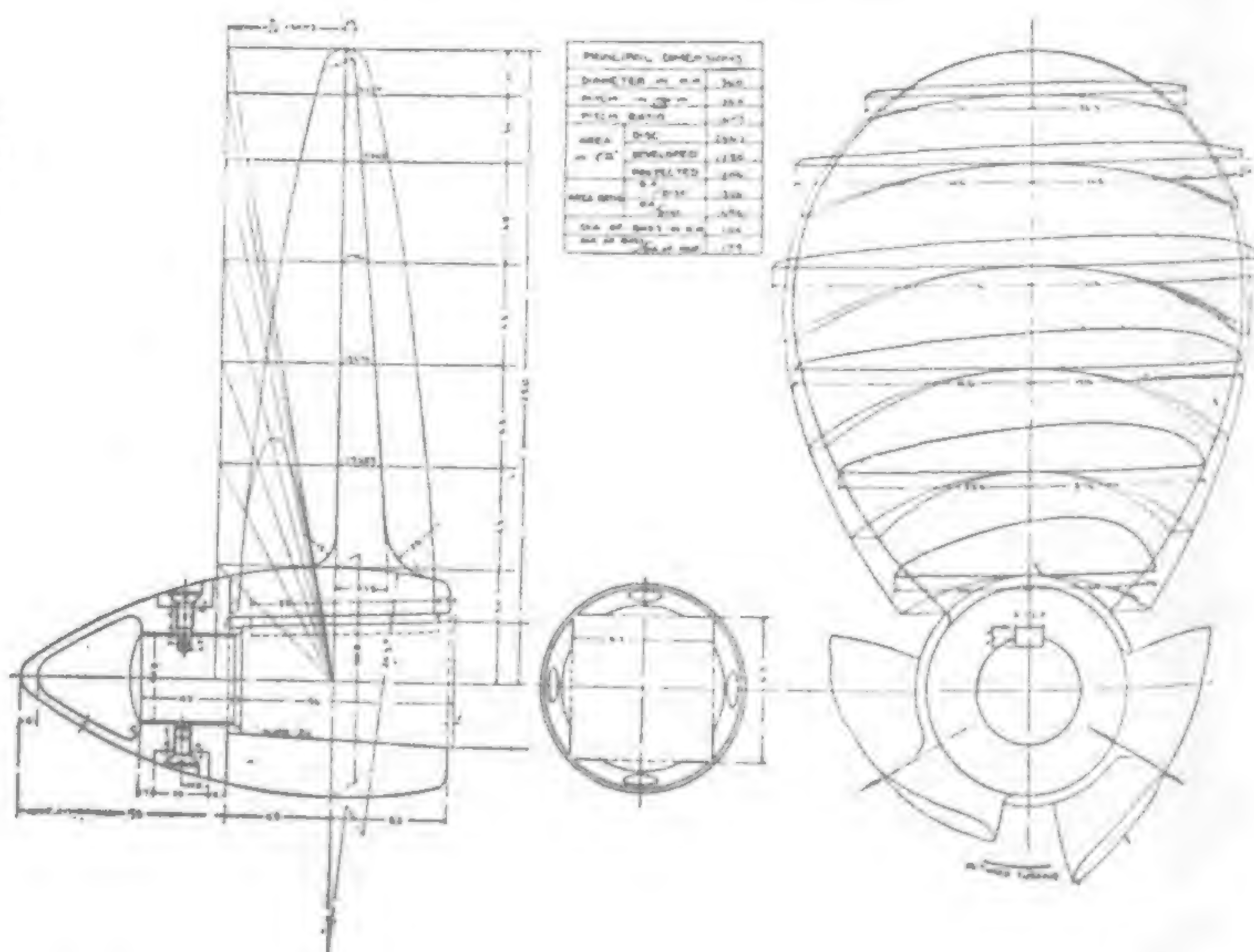


Plate 14.—Flooding Calculation for 15m. Motor Life-boat and Ordinary Motor Launch (Both have Wooden Hulls).

PROPELLER WITH AEROFOIL SECTIONS OF 15M. MOTOR LIFE-BOAT FOR I.J.L.B.I.

PLATE 20



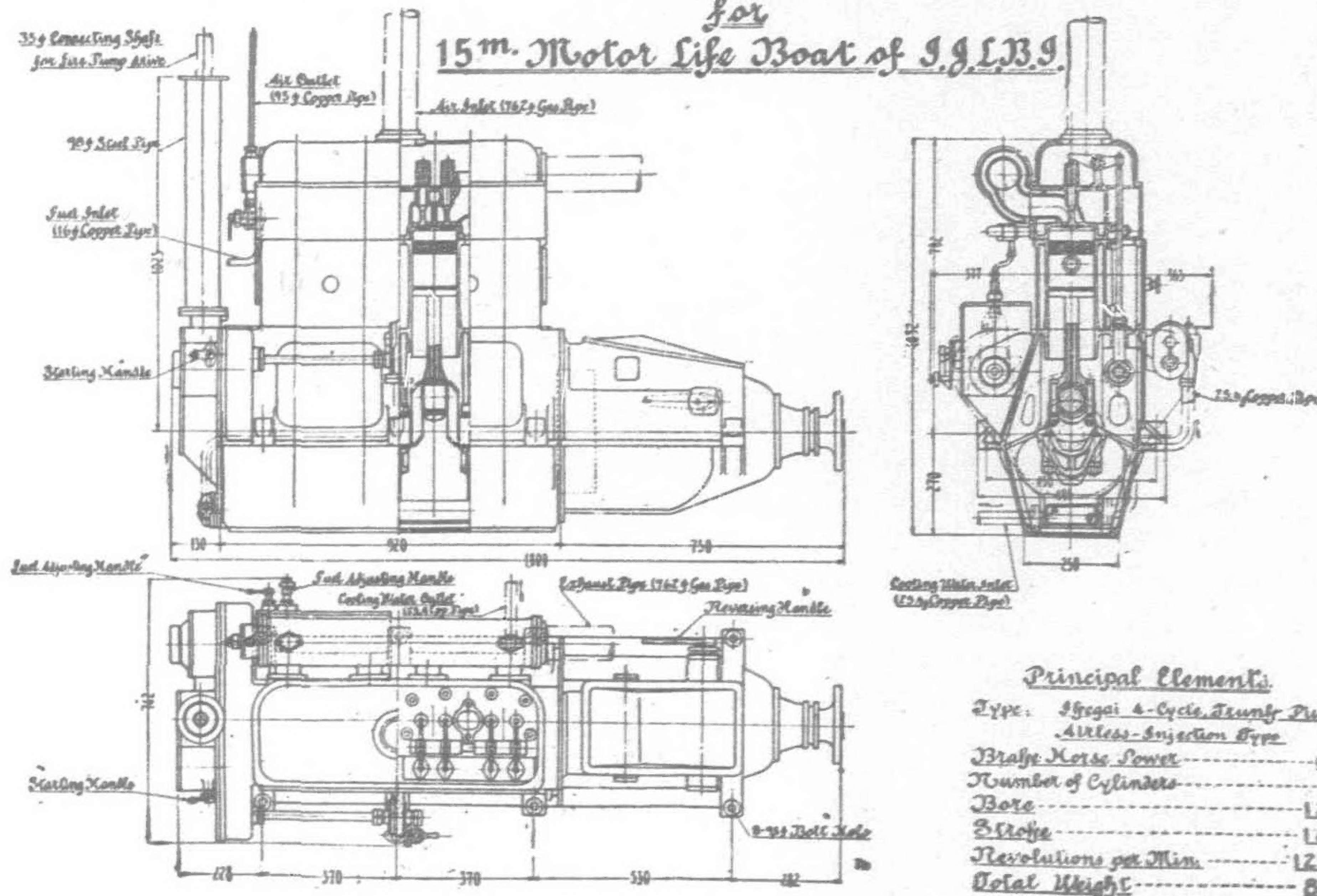
2. The engines to be perfectly watertight and to be tested in water, totally immersed, for a duration of not shorter than one hour at full power.
3. One engine also to drive a capstan and the other to drive a bilge and fire pump.

In order to satisfy the requirements, the builders carried out the design as follows:—

- (a) In view of the reduction of the efficiency of engines at submerged full power trials and the power loss due to the water disturbance of couplings at main shafts, the diameter of cylinders was increased to 125 mm. from 120 mm. of the original standard engine of 4HSD12 type with an output of 60 b.h.p. at 1,200 r.p.m.
- (b) The main parts of the engines were made in one casting, as far as practicable, to minimize the number of joints, whilst all moving parts were arranged inside a closed chamber except where unavoidable. Valves and valve gear arrangement fuel pumps, governor, flywheel, etc., are all enclosed in this chamber. Adjusting handles, reversing lever, etc., which penetrate the casing are fitted with glands and the sliding motion is altered to rotation at these parts in order to secure perfect watertightness. Propeller shafting has double tubing and the entry of water is prevented by lubricating oil pressure.
- (c) All inspection holes are fitted with a flat plate cover screwed up tightly, and for seams of the outer casing so-called "three-line one-corner joints" are strictly avoided, and the whole construction is made as simple as possible. Cylinders, frames and bed plate are cast in one block for

*General View
of
Completely Submersible 4-Cylinder, 60 B.H.P.
Diesel Engine
for
15m. Motor Life Boat of I.G.L.B.S.*

Plate 15.



four cylinders, and cylinder covers are also of a single casting, each cover having screw tups at watertight pitch. As by-products of this construction, the engines became very strong as a whole which is particularly desirable for wooden boats, and also noise is considerably reduced as the result of total enclosure.

It is unavoidable, however, that the castings for cylinders, covers, etc., become somewhat complex, but the increase of weight in comparison with the usual standard type has been much less than was expected, whilst the whole performance has been exceptionally good.

The leading particulars of the new watertight engine and the standard type are given below:—

Watertight Type. Standard Type.

B.H.P.	..	..	60	60
R.P.M.	..	..	1,200	1,200
Diameter of cylinders, mm.	..	..	125	120
Stroke, mm.	..	..	180	180
Number of cylinders.	..	..	4	4
Weight of engine, kgs.	..	..	820	670

Further, a comparison of this engine with other leading European-built gasoline engines of the same output is shown diagrammatically in Plate 18 from which it will be seen that a great volumetric economy was attained in this new engine.

(3) *General Construction.*—The engine comprises four principle parts as shown in Plate 15:—

1. Single cover for four cylinders.
2. Single block casting from cylinders to oil swamp.
3. A bell-housing for reversing gear.
4. A top bonnet.

These are joined tightly with special packings, and

- (a) Main shaft at sternward side,
- (b) Circulating-water pump-shaft at gear side,
- (c) Fuel oil regulator,
- (d) Starting air regulator,
- (e) Reversing gear and control devices,

are made watertight using glands and shaft packings, whilst for the main shaft forced lubrication is applied.

One of the engines is so designed as to drive a capstan, for that power is transmitted from the crank shaft through gearings, a shafting, a special watertight box and a vertical tube. Fuel pumps are totally enclosed in a separate box. Suction air enters to the engine room from a cowl-head on the casing deck, whilst the suction pipes of the engines are situated at distant positions from the down-cast and being open against the ceiling, there is practically

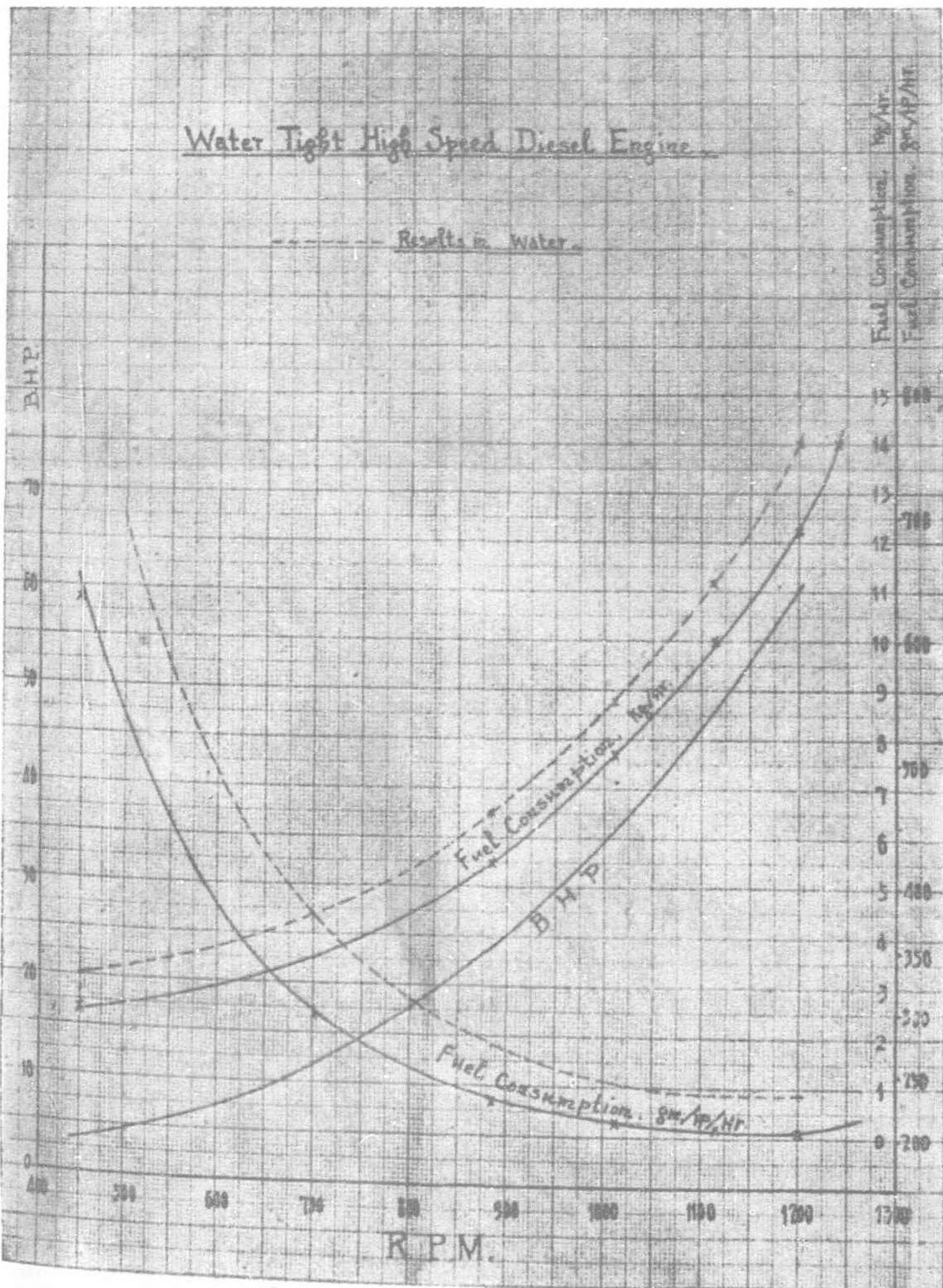


Plate 19.—Curves showing the result of Shop Test of the Engine

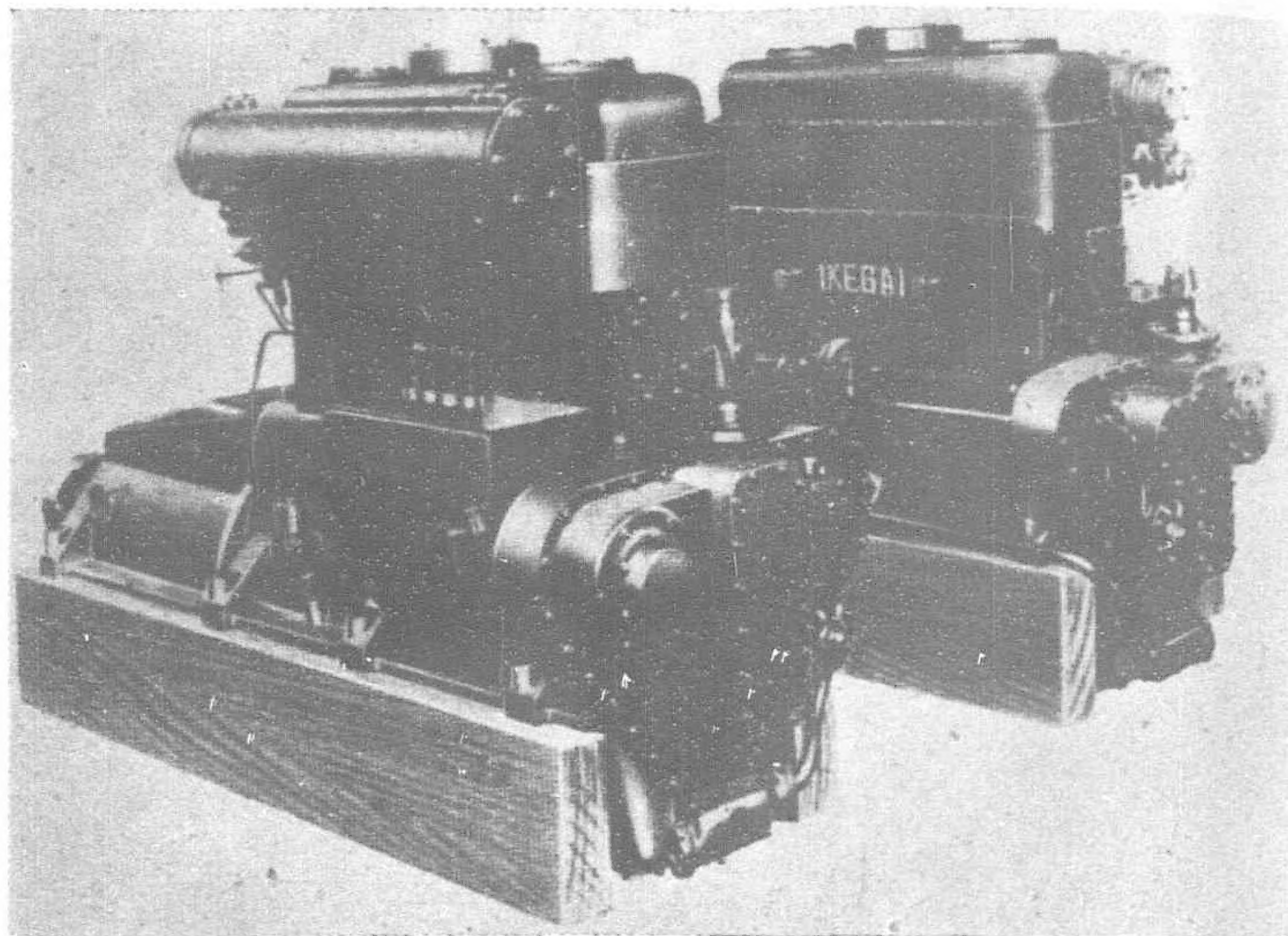
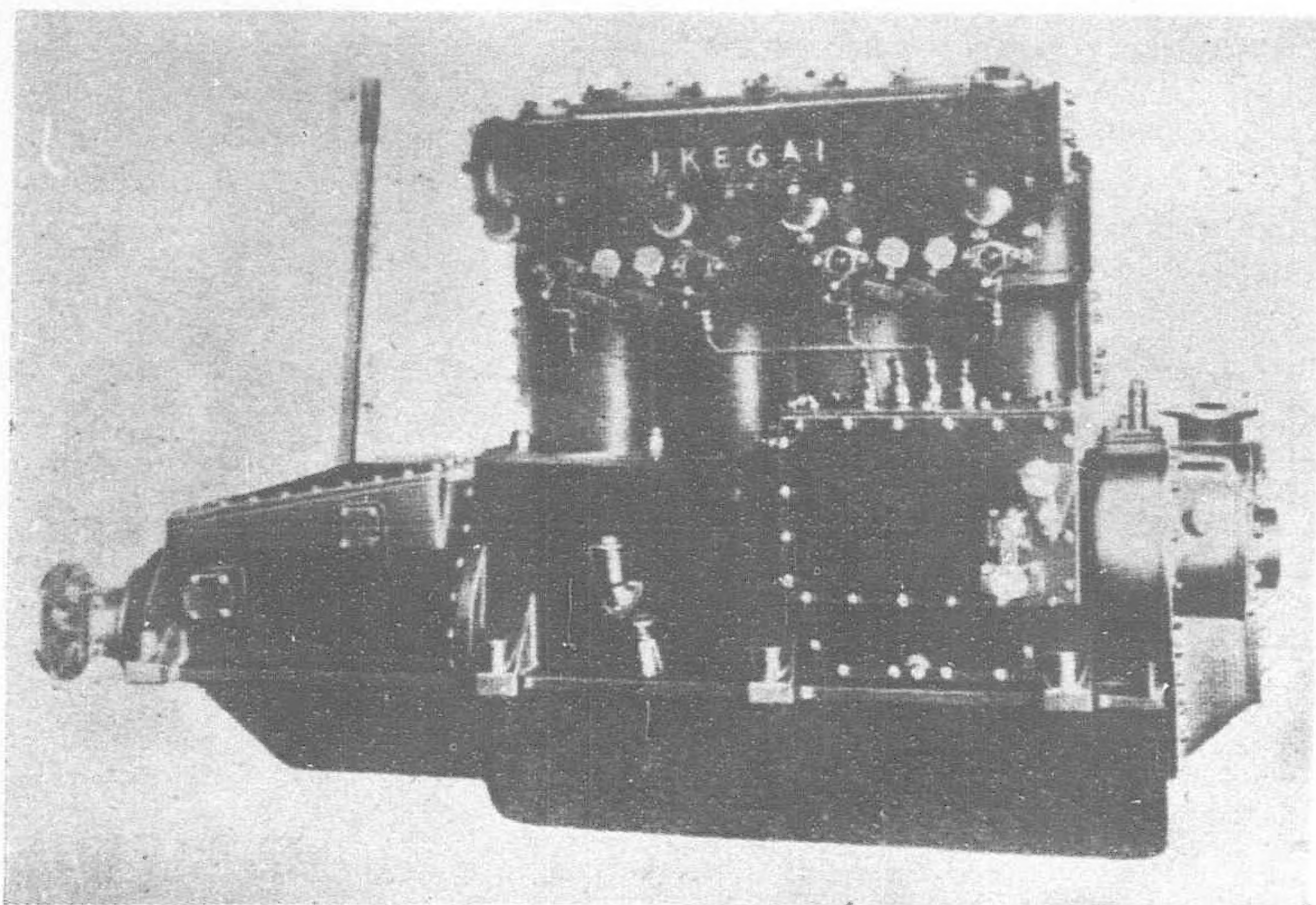


Plate 16.—Photographic Views of the Engine

no fear for inducing sea water to the engine suction. Air from these suction pipes reaches to the suction valves of the engines through Ikegai patent air inlets. The turning device of the engine is fitted to a part of the capstan control lever, where crank positions are readily indicated.

All manœuvring devices including those for starting, fuel regulating, reversing, etc., are assembled in the pilot house, so no engineer is required in the engine room during operation.

(4) *Test Results.*—The tests were carried out as usual on the test bed and also under submerged conditions in a water tank. Fuel oil used is ordinary Tarakan Diesel oil having a specific gravity of 0.93 at 15° C. a viscosity of 104 per sec. at 20° C. by Redwood's, a calorific value of 10,584 cal. per kg. and a flashing point at 95° C.

As shown in Plate 17, the submerged tests were carried out in a water tank of 7-ft. × 3-ft. × 5-ft., having kept the water level at 1-ft. above the engine top. In order to inspect the leakage of water during these tests, a pipe with a test cock was led to the outside of the tank from the lowest part of the crank chamber. Examinations from time to time shewed no trace of leakage of water, even after several days' running. Special incidents observed during the submerged testing were that the engine was almost noiseless and that the power loss due to the water disturbance of the coupling was so large as to cause a considerable increase of fuel consumption.

The engine was demonstrated for a few days, by running several hours a day in water, and the results were acknowledged by inspectors as very satisfactory and the leakage of water was proved absolutely nil.

The results of shop trials are graphically shewn in Plate 19.

(5) *Auxiliaries.*—In the engine room, apart from the main engines, is a small gasoline engine dynamo set, which is installed in a high position to avoid the immersion of water, and a fire pump driven by the port side main engine is also provided to discharge water through fire-guns installed on the deck and for the bilge pumping, etc.

The vessel has been designed as fully explained above and is now under construction. It is expected, however, that some alterations and improvements may be necessary after the actual operation at sea, as the vessel of this type is introduced for the first time in Japan. Full trial results and a complete report for the actual performance at sea may perhaps be published after the completion of this boat.

The authors desire to express thanks to Constructor Vice-Admiral Y. Hiraga, Professor N. Yamamoto, D.Sc., Constructor Lieut.-Commander K. Ota, Engineer Lieut.-Commander Y. Amari and other friends for their valuable advice and kind assistances.

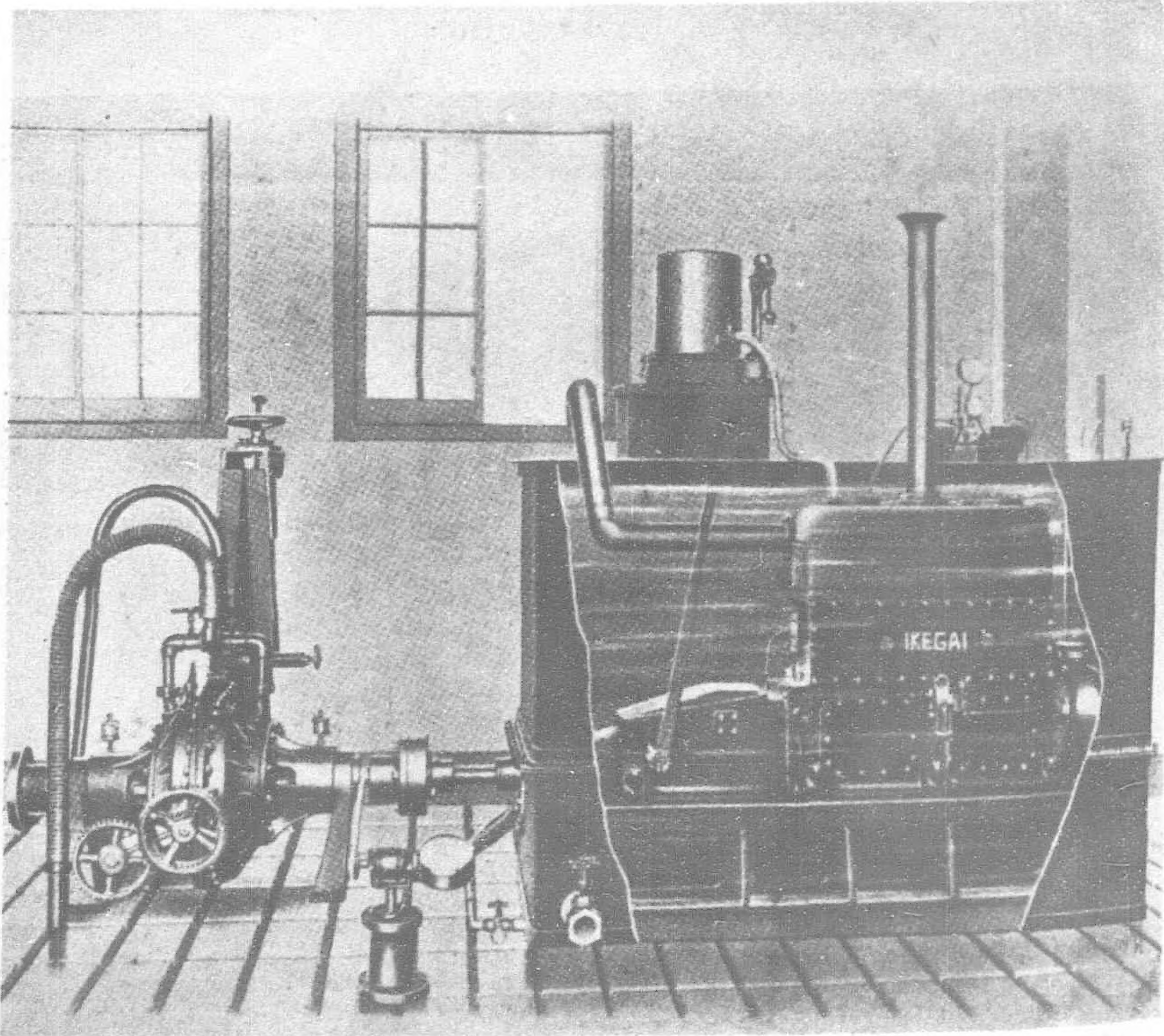
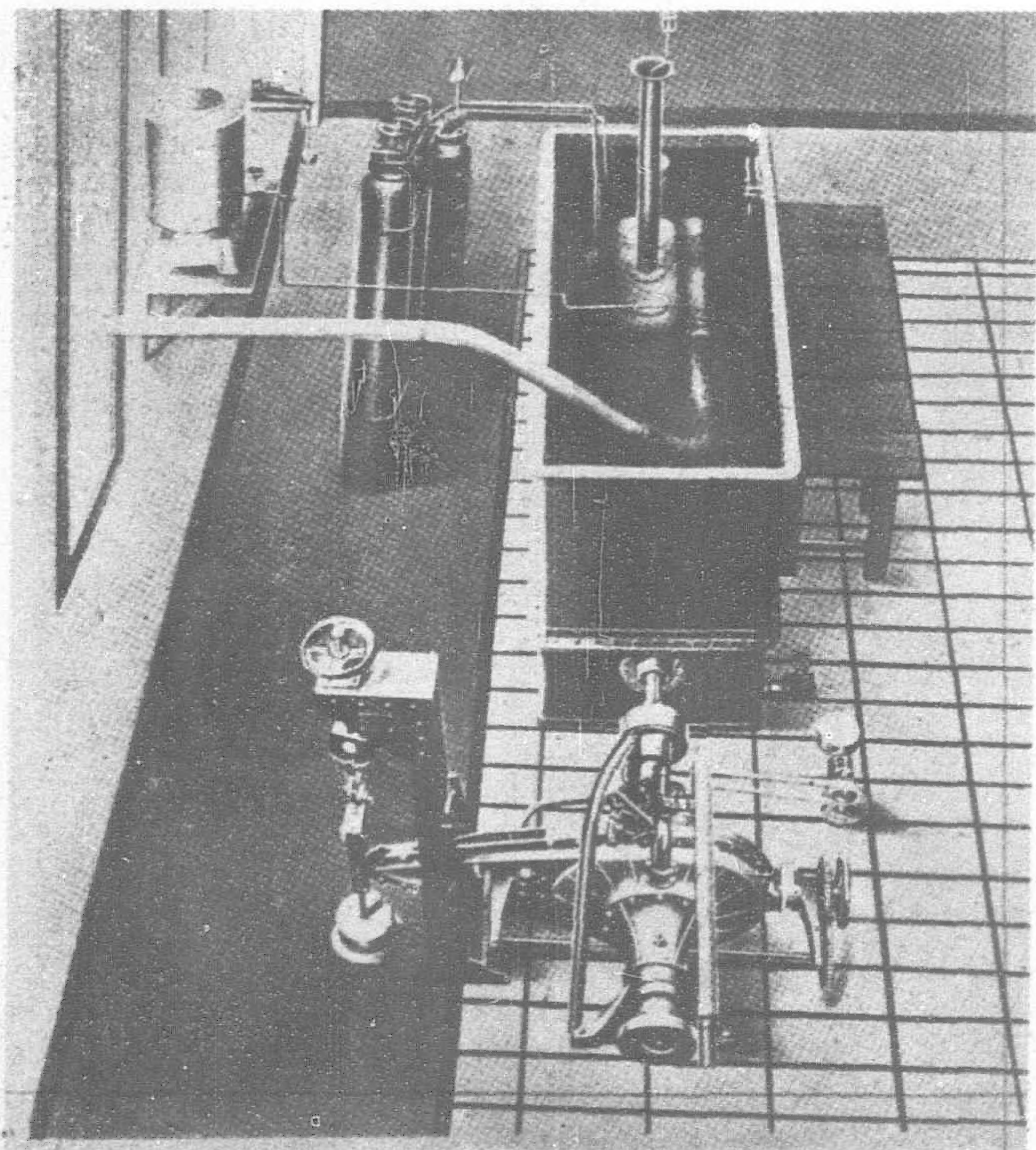


Plate 17.—Showing the Shop Test Apparatus, from above and an Interior View of Test Tank

China's First Scientific Bakery

(Continued from page 424)

cooled and washed by special machinery before entering the factory. This governs the humidity and temperature.

On each floor are separate locker rooms and shower rooms, lavatories, and pan washing rooms. The factory will maintain and operate its own laundry. The head man or foreman of each department will be a foreigner specially trained in his own line of work—candy making, baking, etc.

Costs \$750,000

Biscuits will be distributed in large sealed tins, bearing the Bakerite trade mark. Candy will retain the Chocolate Shop name.

The cost of the land, the cost of construction of the plant, and of the machinery and equipment, will amount to approximately M.\$750,000 Mr. Raven said. After the factory has settled into its stride, it is expected that it will increase the yearly turnover of the Bakerite Company from its present \$1,000,000 to \$5,000,000.

Mr. Raven is president and manager of the Company. The engineer in charge of the plant, Mr. Baker, is vice-president, while Mrs. H. B. Campbell, well-known to Chocolate Shop patrons, is the secretary.—*The China Press*.

The New Passenger and Cargo Steamer "Ussuri Maru"

(Continued from page 431)

To minimize the resistance caused by the air and also to prevent soot from falling on the decks, the funnel is so designed as to have an aerofoil section. In order to reduce the vacuum that is caused behind the funnel, on the front and back surface near the top of the outer funnel air holes are made which allow the air to enter through the front holes, and to leave from the rear holes, after passing through the air ducts built along the inside of outer funnel.

Ventilators: The weight of the cowls of the ventilators is usually supported on the circumference of the stands. Accordingly, there is some resistance in slewing the cowls, and inconvenience has been experienced in slewing them to suit the direction of the wind. In this ship, arrangements have been provided whereby the weight of the cowls is supported at one point in center, and a clearance is made between the cowl and the stand, so that there occurs very little resistance. With this improvement, very little man power is required to turn the cowls.

Programme of Construction

It was in January, 1931, that the order for the construction of the *Ussuri Maru* was placed with the builders. On April 22 of that year the work was commenced and the keel laying completed. The vessel took the water for the first time at 8.50 a.m. on November 26, she was to be completed at the end of March, 1932, but work was advanced and she was handed over to the owners on March 25. On the following day, the new liner sailed from Nagasaki for Osaka, and started on her maiden voyage on April 3. Previous to this, that is on March 2 and the 5th, the official trials were run off Miye, outside Nagasaki Harbor. The results obtained were as tabulated, and were most satisfactory, the maximum speed being 18.06 knots with a steam and fuel consumption respectively of 4.026 kgs. and 0.482 kgs. per s.h.p. hour.

What Will Save the Japanese Yen?

(Continued from page 404)

who take advantage of the special session of the Diet now assembled. It is generally considered, however, that the National Government will pull through. This prediction is based on the ground that no party can afford to hold itself responsible for the wreck of the Government as that would mean further delay of urgent relief measures.

Under the circumstances, Japan's foreign relations become the most important factor in contemplating the prospects of the exchange market. It is with this fact in view that Japan awaits

the outcome of the League of Nations Assembly and also the presidential election in the United States.

The writer, in the early part of this article, said that it is beyond the imagination of observers that Japanese money may follow the course of the German mark, on the ground that the economic situation in Japan to-day and that in Germany during the inflation days are entirely different. And, he believes that mere comparison of the currency circulation in Japan to-day and that in Germany in those days will convince any one how different the situation is. He thinks it hardly necessary to go into details of the domestic and international political and economic circumstances of Germany in 1922-3 to compare it with that of Japan.

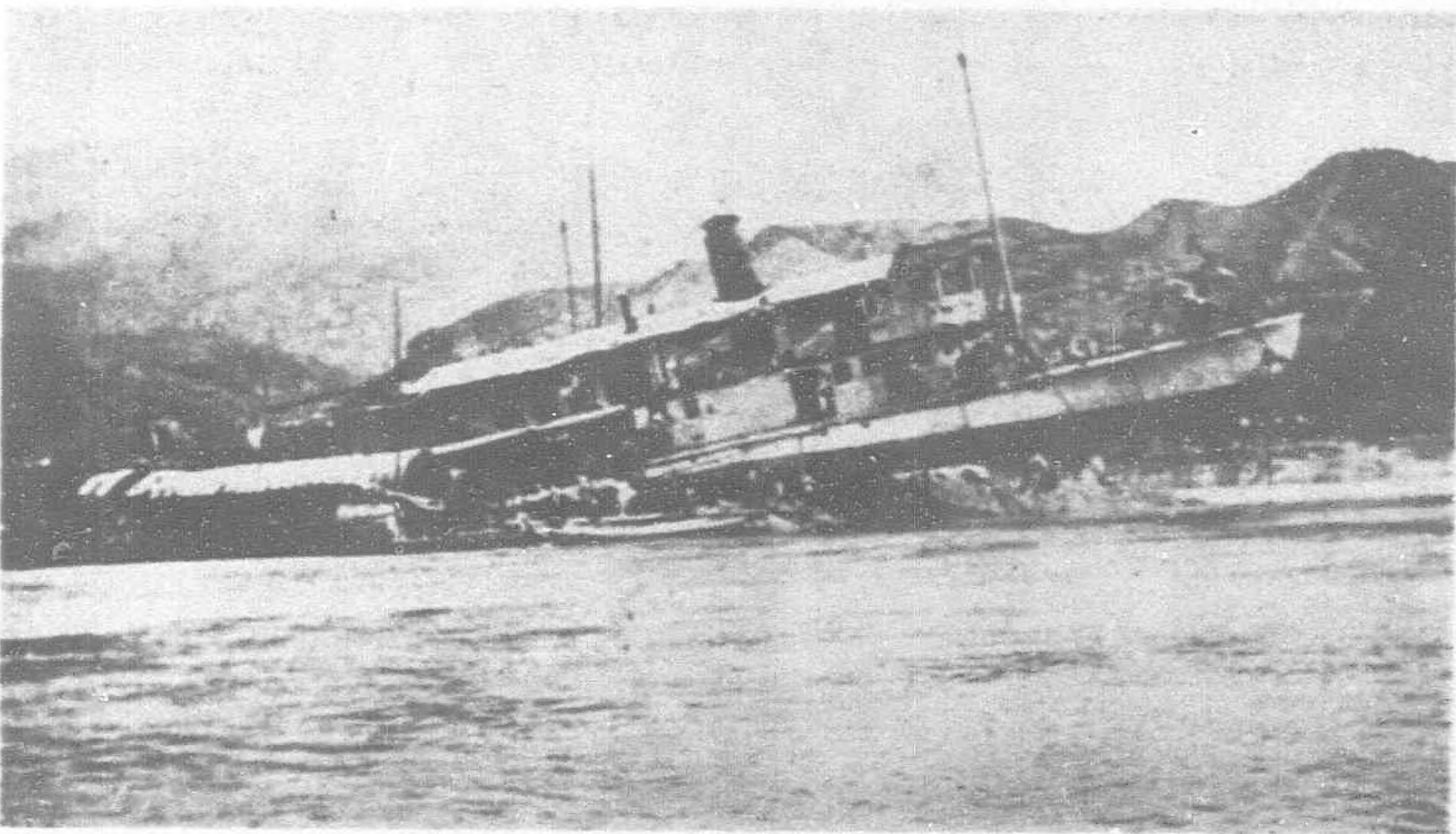
The German currency circulation in July, 1922, reached 202 billion with the index number of the wholesale price of commodities standing at 100.59. One year later, or in July, 1923, the note circulation rose to 43,813 billion marks, the wholesale price index number also advancing to 183.5. In December, 1923, moreover, the note circulation soared to 469,585,345,900 billion marks, the wholesale price index number, too, jumping to 1,200,400,000!

The Bank of Japan notes circulation on August 22, 1931, stood at Y.950,703,000—less than one billion yen. It increased to Y.1,330,000,000 at the end of December, 1931, this inflation resulting from the semi-annual year-end settlement of accounts. The circulation, however, soon went back to normal. On August 22, 1932, therefore, it stood at Y.958,599,000. Compared with the corresponding date of 1931, it represented an increase of a little less than Y.8,000,000.

Admitting that the Government and prefectural governments are going to disburse approximately Y.1,600,000,000 to deal with the national crisis, the note circulation does not increase in proportion. Even if it did, it is still a long way to reach the German standard of inflation in 1923.

New Gunboat for China

The Admiralty contract given to John I. Thornycroft and Co., Ltd. for the construction of a river gunboat for service in China, recalls the original Yangtze river boats, H.M.S. *Woodcock* and H.M.S. *Woodlark*, built by Thornycrofts in 1897, which completed over 30 years' service before they were withdrawn from the Navy List in 1928, when they had the distinction of being the oldest vessels in fighting commission in the British Navy.



Thirty years ago Yangtze navigation was fraught with difficulties such as are depicted in this picture of a Thornycroft shallow-draft vessel stranded on a rock due to a sudden fall in the water level. It was refloated without having sustained serious damage.

They both proved extremely satisfactory vessels for their arduous conditions of service, the *Woodlark* being the first steamer of any size to navigate the long and difficult gorge of the Upper Yangtze River from Ichang to Chungking.

Practically repeat vessels were afterwards ordered by the French and Japanese Governments, the *Sumida* built in 1903, appearing in Jane's "Fighting Ships" as still being in service with the Japanese Navy.

The new boat will be built to Admiralty design, but no details are yet available for publication.

Engineering Notes

INDUSTRIAL

RAIL SPIKES FOR CHINA.—Among large quantities of British goods now on their way to China—for buying on behalf of this market has revived noticeably during the last month or two—is a consignment of 500 tons of railway screw spikes manufactured to the order of the Chinese Government by Messrs. Charles Richards and Sons, Ltd., at their works in Darlaston, South Staffordshire. As can be imagined, the contract was only secured in the face of the keenest competition, and it is a tribute to the firm in question not only that they were able to obtain the business in the teeth of the fiercest rivalry, but that they were able to execute the order well within the specified time of five weeks. The screws are approximately five inches long, with square heads; roughly 600 tons of steel bars, 100 per cent British, were used in the operation of forging and rolling the screws; and the completed goods were packed in 5,760 cases for conveyance to China. Although among the largest private individual bolt and nut firms in existence, and well accustomed to handling large orders for the railways of Great Britain, South Africa and many other countries, Messrs. Charles Richards and Sons, Ltd., may well feel gratified at their latest achievement. —*British Export Guide.*

CHEMICAL INDUSTRY.—With regard to the proposed establishment of an ammonium-sulphate works by the Chinese Government, it is learnt that this will be established in the interior for strategic reasons. Experts are now in Hunan Province selecting a suitable site in proximity to sulphur mines. The works will be capitalized at \$3,000,000, and British and German interests will supply the necessary technical assistance. The Chinese Ministry of Industry will shortly establish at Shanghai a branch of the Central Industrial Research Laboratory. The development of sulphur mines in Hunan, Honan, and Shansi is being considered by the Ministry of In-

dustry. Mineralogists will shortly be sent to the three provinces for prospecting purposes, and plans are being drafted by the Ministry for the operation of mines on a commercial basis.—*Chemical Trade Journal.*

RAILWAYS

LIGHT RAILWAY IN CHEKIANG.—Construction of a light railway in China linking Wuhu, the main port of Anhwei, with Chapu, the proposed site of the Great Eastern Port on the Chekiang coast, is sponsored by Messrs. Li Shih-tseng and Chang Ching-kiang, members of the Central Supervisory Committee. It is understood that approval of the Ministry of Railways has already been obtained. This railway, which will be approximately 160 miles in length, will be built as a private enterprise, and will be a narrow-gauge line, designed to serve the needs of the districts traversed. Mr. Chang Ching-kiang, who is also Chairman of the National Reconstruction Commission, is particularly interested in such constructive enterprises, and it was under his administration as Chairman of the Chekiang Provincial Government that the provincial Hangchow-Kiangshan Railway was built.

AVIATION

NEW GERMAN AIRPLANES.—Two new Junker machines of the latest type, model M33, recently arrived in China from Germany and were delivered to the consignees, the Eurasia Aviation Corporation. These machines were ordered several months ago for service on the Nanking-Sinkiang airway.

LINE TO EUROPE.—The Chinese Government is arranging to inaugurate the Eurasia air mail service to Europe as soon as possible in order to overcome the inconvenience caused by the postal embargo declared against Manchuria. The

embargo prevents the despatch of mail to Europe via Siberia and the Government seeks to overcome this by air mail. Plans are now under discussion between the Ministries of Foreign Affairs and Communications.

COMMUNICATIONS

HIGHWAYS IN CHINA.—Plans for the construction of a network of highways in the three provinces of Kiangsi, Hupeh, and Hunan, recently submitted to the Executive Yuan by the Ministry of Railways, have been referred to the Political Affairs Department of the Yuan for examination.

TELEPHONES IN CHEKIANG.—Since the establishment of the Chekiang Provincial Telephone Bureau in 1928, a total of over 6,000 meters of telephone lines have been installed in the province. In order to meet the still pressing need, the Bureau has decided to instal 17 long-distance lines, totalling 1,454 li in length, and 11 other lines for frontier defence, totalling 765 li in length.

SHANGHAI-HANGCHOW ROAD.—The Shanghai-Hangchow Inter-Provincial Highway is reported to be near completion. Work on the last section between Nanchiao and Chapoo is now being hastened so that the Highway may be opened for traffic in September.

LONG DISTANCE 'PHONE.—Installation of a long-distance telephone line between Pukow and Tsinan for the Tientsin-Pukow Railway has been ordered. Owing to the absence of this important means of communication railway service on the Pukow-Tsinan section has frequently been delayed. The Telegraph Section of the Railway Administration is to undertake the construction of the line.

SULZER BROTHERS

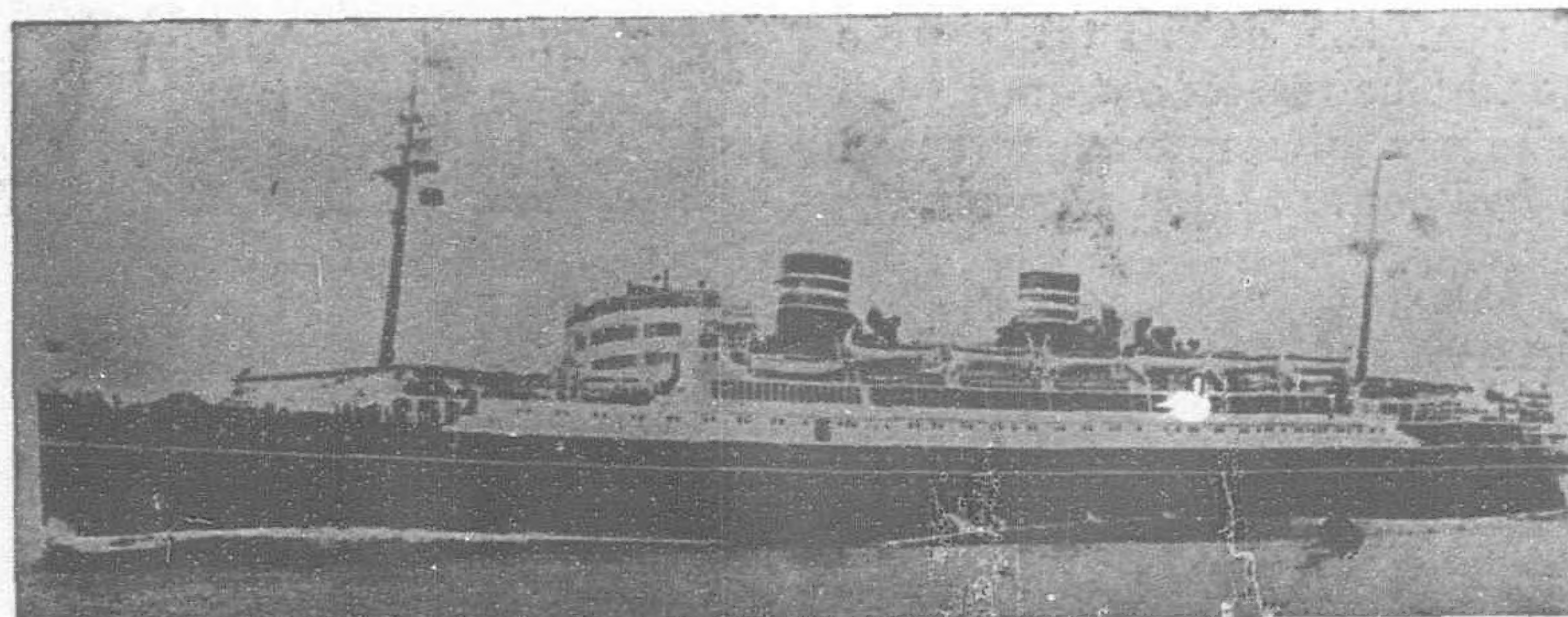
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